

Report No. 53 of the Director of Audit — Chapter 3

CONSTRUCTION WORKS UNDER CASTLE PEAK ROAD IMPROVEMENT PROJECT

Summary

1. In 1994, the Highways Department (HyD) planned to upgrade Road Section A (between Hoi On Road, Tsuen Wan and Ka Loon Tsuen) and Road Section B (between Ka Loon Tsuen and Siu Lam) of Castle Peak Road (CPR) to a dual two-lane carriageway under a works project (the CPR Project). The HyD appointed four consultants (Consultants A to D) to carry out feasibility studies, investigations and designs. Between August 2001 and December 2005, the HyD awarded five contracts (Contracts A to E) for the construction works. The whole dual two-lane carriageway was open to traffic in phases from March 2005 to July 2007. The Audit Commission (Audit) has recently conducted a review to examine the HyD's administration of the works under the CPR Project.

Management of omitted items under Contracts A to D

2. The Bills of Quantities (BQ) of a remeasurement contract allow a comparison of tender prices and provide a means of valuing works items. Upon completion of works, payments are made to a contractor based on the actual quantity of works carried out and the rate of the BQ items.

3. *Need to take measures to minimise omitted items.* An omitted item refers to the omission of an appropriate item in the BQ for works or services shown in contract specifications. Audit examination of Contracts A and C revealed that, as at 31 March 2009, there were 1,466 omitted items with a total value of \$120.4 million. *Audit has recommended that the Director of Highways should: (a) remind HyD staff and consultants to ensure the completeness and accuracy of BQ; (b) conduct reviews of works contracts with a significant amount of omitted items upon substantial completion of the contracts; and (c) evaluate the consultants' performance in preparing BQ.*

4. *Need to improve monitoring over omitted items.* For Contracts A and C, there was no record showing the acceptance of omitted items by the Engineer and the valuation of omitted items was only shown on the interim payment certificates of works. Furthermore, under the consultancy agreement, the consultant was not required to provide monthly reports on omitted items. *Audit has recommended that the Director of Highways*

should, in consultation with the Secretary for Development, consider specifying in consultancy agreements the requirements for consultants to: (a) document the justifications for accepting an omitted item, and the basis for valuing the item; and (b) provide regular updates on omitted items accepted for payment.

Noise mitigation measures under Contract A

5. Contract A included the erection of a noise barrier adjacent to a residential area at Yau Kom Tau. According to an Environmental Impact Assessment (EIA) report submitted to the Environmental Protection Department (EPD) in December 1996, there were no durable low noise road surfacing (LNRS) materials suitable for the CPR Project at that time. If the use of a durable LNRS material was proven, it might be considered at future stages of the project as an effective noise mitigation measure.

6. In the two EIA reports submitted to the EPD in May 1998 and January 2000 respectively, there was no mention that reviews had been carried out to ascertain the availability of more durable LNRS materials for Yau Kom Tau. Subsequently, a noise barrier was included in its works design. In May 2002, the noise-barrier works commenced.

7. In July 2003, after noting the EPD's draft guidance notes of April 2003 and reviewing the cost-effectiveness of constructing noise barriers for a road section, the HyD suspended the noise-barrier works at Yau Kom Tau. In September 2003, the HyD said that LNRS materials had become more durable and were then considered appropriate. In December 2003, the HyD issued a variation order for surfacing the road section with LNRS materials. As a result, the noise-barrier foundation works at a cost of \$8.7 million became abortive. *Audit has recommended that the Director of Highways should take measures to remind HyD staff of the need to critically examine the feasibility of adopting a more cost-effective methodology during the course of a road project.*

Noise mitigation measures under Contract E

8. Contract E included the construction of a new viaduct (Viaduct A) connecting Tai Lam Kok and Siu Lam. In August 2001, the HyD submitted an EIA report to the EPD, which proposed constructing a noise barrier on Viaduct A. In October 2003, the HyD submitted an environmental review report to the EPD, stating that the effectiveness of the proposed noise barrier was very minimal as the noise level in the vicinity was dominated by traffic noise generated from existing roads. Installing the noise barrier on the viaduct was therefore not recommended. Instead, LNRS materials would be laid on Viaduct A.

9. In February 2004, the HyD awarded Contract E to Contractor E. In December 2004, despite the decision not to install the noise barrier, the HyD informed Contractor E to carry out noise-barrier foundation works on Viaduct A. In November 2006, the foundation works of \$2 million were completed.

10. The construction of a noise barrier on Viaduct A was considered ineffective, and there was no planned property development near Viaduct A. In Audit's view, it may not be justifiable to carry out the noise-barrier foundation works on the viaduct. *Audit has recommended that, in administering a road project in future, the Director of Highways should remind HyD staff to critically examine the need for, and cost-effectiveness of, providing noise mitigation measures.*

Rainwater drainage system under Contract C

11. Under Contract C, two cross-road drains were constructed underneath a section of CPR at Ting Kau to direct rainwater from the streams in the upland areas to the sea. According to a Drainage Impact Assessment (DIA) study report submitted to the HyD and the Drainage Services Department (DSD) in March 1998, drainage impact mitigation measures were proposed for the cross-road drains and a section of a rainwater channel running through Ting Kau Village. However, the mitigation measures proposed for the rainwater channel section were deleted from the detailed design.

12. On 2 June 2006, there was a heavy rainstorm causing flooding in the vicinity of Ting Kau Village and resulting in damages to some properties. Between December 2006 and August 2007, the HyD carried out further improvement works on the water intakes of the cross-road drains and on the rainwater channels at a cost of \$7.1 million.

13. ***Need to ensure sufficient capacity of rainwater drainage system.*** In June 1999, the DSD said that the rainwater channels should have sufficient capacity to handle the water flow. However, improvement works were only carried out on the cross-road drains, but not on the rainwater channels. According to Consultant B, the water intakes of the cross-road drains could not cope with the peak runoff, and the capacity of the rainwater channels was marginally adequate to cope with the water flow. As a result, further improvement works were carried out. *Audit has recommended that the Director of Highways should remind HyD staff to: (a) take measures to ensure that different parts of the related rainwater drainage system have sufficient capacity to cope with the peak water flow; and (b) enhance coordination with the DSD on designing the capacity of rainwater drainage systems.*

14. ***Need to inform the DSD of drainage improvement works.*** In June 1999, the DSD said that, if improvement works for the rainwater channels were required, the works should be included in the CPR Project. However, in July 2006, Consultant B said that the improvement works for the rainwater channels were considered as drainage improvement works and were therefore excluded from the CPR Project. *Audit has recommended that the Director of Highways should remind HyD staff to inform the DSD of drainage improvement works identified during the course of a road project with a view to working out arrangements for implementing the works in a timely manner.*

15. ***Need to establish a DIA study working group.*** According to the consultancy agreement, a study working group should be set up to provide guidance to Consultant B, and review the work and output of the DIA study. However, such a working group was not established. *Audit has recommended that the Director of Highways should remind HyD staff to establish a DIA study working group to monitor the related rainwater drainage improvement works of a road project.*

16. ***Need to certify drainage impact mitigation measures.*** According to the Works Branch Technical Circular in force at the time, the responsible works department should certify to the DSD that the agreed drainage impact mitigation measures had been incorporated into the documents forwarded to the DSD. However, the HyD did not comply with the certification requirement. *Audit has recommended that the Director of Highways should remind HyD staff to: (a) certify to the DSD the agreed drainage impact mitigation measures; and (b) draw the DSD's attention to significant revisions to the agreed measures.*

Response from the Administration

17. The Administration agrees with the audit recommendations.

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