

TUNG CHUNG ROAD IMPROVEMENT PROJECT

Executive Summary

1. Tung Chung Road (TCR) is the only vehicular access connecting North and South Lantau between Tung Chung and Cheung Sha. Before 2002, TCR was a single-lane road for two-way traffic with sharp bends and steep gradients. This traffic arrangement posed high safety risks and caused inconvenience to road users. From 2002 to 2009, the Government implemented the TCR Improvement Project to progressively upgrade TCR to a single two-lane road for two-way traffic with lower gradients. The Project was carried out under two works projects by two Government departments respectively, namely Project A (from Pa Mei to Lung Tseng Tau) by the Civil Engineering and Development Department and Project B (from Lung Tseng Tau to Cheung Sha Sheung Tsuen) by the Highways Department (HyD).

2. Contract A under Project A commenced in May 2002 was substantially completed in December 2003 at a cost of \$22.6 million, which was on schedule and within budget. Contract B under Project B commenced in June 2004 was substantially completed in June 2009 at a cost of \$743.5 million. There was a 36-month delay and a 32% cost increase in completing Contract B. Single two-lane TCR was open to traffic in February 2009.

Project planning and environmental impact assessment

3. In 1997, the HyD found in a feasibility study that upgrading TCR along the existing alignment was not acceptable because of excessive gradients of some sections of the road. The HyD subsequently identified a new road option between Tai Ho Wan and Mui Wo (Tai Ho Wan Option) which would be shorter and have lower gradients than the TCR on-line option. From 1998 to 2000, the HyD carried out environmental impact assessments (EIAs) for proposed works under the Tai Ho Wan Option. However, the Environmental Protection Department (EPD) did not

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issue environmental permits for the works on the grounds that the EIA reports submitted by the HyD did not meet the EPD's requirements. In 2001, the HyD re-examined the feasibility of widening TCR along the existing alignment and decided to adopt a new scheme of widening a road section of TCR from Lung Tseng Tau to Pak Kung Au and constructing a new road section from Pak Kung Au to Cheung Sha Sheung Tsuen (Adopted Option). This scheme was implemented under Project B (paras. 1.6 to 1.8 and 2.3).

4. ***Road options not thoroughly explored during feasibility study in 1997.***

In January 2001, the HyD informed the Legislative Council Panel on Transport that the Adopted Option was the most promising solution. However, Audit is concerned that the HyD had not identified the Adopted Option during its feasibility study in 1997. This resulted in incurring additional cost of \$9 million and taking more than three years in conducting the design and investigation of the Tai Ho Wan Option, which was eventually abandoned (para. 2.24).

5. ***Inadequate consideration of challenges for carrying out works in areas of ecological significance.***

According to the EPD, the Tai Ho Wan Option would lead to a substantial habitat loss of woodland, adverse impacts on areas of ecological significance including Tai Ho Stream, disturbance and a loss of habitat of protected or rare species, and encroachment on the Lantau Country Park. From 1997 to 2000, the Agriculture, Fisheries and Conservation Department, the Planning Department, the Country and Marine Parks Board and the Advisory Council on the Environment had raised reservations over the Tai Ho Wan Option. However, the HyD had not adequately considered their views and the challenges in investigating the Tai Ho Wan Option (paras. 2.26 and 2.27).

6. ***Project feasibility not critically re-examined after significant changes in circumstances.***

Tai Ho Stream was designated as a Site of Special Scientific Interest in May 1999. As a result, the proposed reclamation in Tai Ho Wan area was shelved. However, the HyD had not critically re-examined the viability of the Tai Ho Wan Option in the light of the significant changes in circumstances, but took another 19 months from May 1999 to December 2000 to further pursue the Option before abandoning it (para. 2.28).

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Project implementation

7. Contract B comprised works for two road sections, namely Road Section A running from Lung Tseng Tau to Pak Kung Au and Road Section B from Pak Kung Au to Cheung Sha Sheung Tsuen. Road Sections A and B had taken additional 1,098 and 953 days respectively for completion. After examining the reasons for the delays, the HyD granted extensions of time (EOTs) of 794 days for Road Section A and 757 days for Road Section B, and imposed liquidated damages totalling \$26.2 million for contract delays of 304 days and 196 days for the two road sections (paras. 3.5 to 3.8).

8. *Insufficient road permits to meet excavation programme.* During the contract period from June 2004 to June 2009, TCR was largely a closed road and a prohibited zone where vehicle users were required to apply from the Transport Department for road permits for using the road. Audit examination revealed that, from November 2004 to March 2005, the actual number of road permits issued to the contractor (Contractor B) was less than that specified in Contract B. Furthermore, according to an Independent Quantity Surveyor employed by the HyD, the number of road permits actually required for the excavation programme was more than that specified in Contract B. As a result, the HyD granted EOTs of 209 days and 143 days for Road Sections A and B respectively, and incurred a related prolongation cost of \$25.8 million for Contract B (paras. 3.14 to 3.18 and 3.20).

9. *Limited site investigation before contract award.* Owing to restrictions on carrying out pre-contract site investigation in country-park areas, only limited site investigation had been carried out before Contract B was awarded. In the event, after commencement of works, the actual site conditions were found significantly different from those ascertained in the site investigation. This led to significant increases in boulder and rock quantities for excavation. As a result, the HyD had to grant EOTs of 134 days and incur a related prolongation cost of \$10.5 million for Contract B (paras. 3.21 and 3.22).

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Adoption of alternative designs

10. In September 2004, Contractor B submitted alternative designs for certain works items to the HyD for approval. In October 2004, Contractor B informed the HyD that there would be a cost saving of \$12 million for adopting the alternative designs and he agreed to share the saving equally with the Government. Works for the alternative designs commenced in June 2006 and were completed in June 2009. In December 2009, the HyD and Contractor B entered into a supplementary agreement under which the HyD would pay a sum of \$150.42 million for the alternative-design works, which was the same cost as the works for the original conforming designs. As a result, there was no cost saving to the Government (paras. 4.8, 4.10 and 4.15).

11. *Tenderers not invited to propose alternative designs.* Notwithstanding that Works Bureau Technical Circular No. 2/2001 had stipulated that works departments might invite tenderers to submit alternative designs during tendering, the HyD did not invite tenderers to propose alternative designs during the tendering of Contract B. In the event, the HyD accepted alternative designs proposed by Contractor B after the award of contract. The HyD's arrangement was not conducive to enhancing competitive tendering (para. 4.11).

12. *Delay in entering into supplementary agreement.* The HyD had not entered into a supplementary agreement with Contractor B before commencing the alternative-design works in June 2006. In the event, when the HyD entered into the supplementary agreement in December 2009, it had already paid \$150.36 million (99.96% of the total cost of the related works) to Contractor B. Under the circumstances, the HyD did not have alternative options, but to accept the completed works (paras. 4.8, 4.14 and 4.15).

Utilisation of TCR

13. *Lower-than-forecast traffic demand.* The objectives of the TCR Improvement Project were to improve road safety and meet future traffic demand. In 2003, it was estimated that the peak volume-to-capacity ratio of improved TCR would be 0.84 in 2011 and increase to 0.99 in 2016. Audit noted that the actual

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utilisation of TCR after the improvement works was 69% less than the forecast utilisation. According to the Transport Department, the significant volume-to-capacity ratio variation was mainly due to the lower-than-forecast population on Lantau Island (paras. 5.3 and 5.5).

Audit recommendations

14. **Audit recommendations are provided in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that, in planning for and implementing a road project in future, the Director of Highways should:**

Project planning and environmental impact assessment

- (a) **conduct thorough examination with a view to identifying all feasible options for comparison and choosing the most practicable and cost-effective one for implementation (para. 2.29(a));**
- (b) **heighten vigilance in planning works that will affect areas of ecological significance (para. 2.29(b));**
- (c) **re-examine the viability of a chosen project option when there are significant changes in circumstances (para. 2.29(c));**

Project implementation

- (d) **take measures to ensure that sufficient number of road permits are specified in the works contract and issued to the contractor, where applicable (para. 3.29(b));**
- (e) **if works are to be carried out within country-park areas, closely liaise with the Director of Agriculture, Fisheries and Conservation with a view to exploring arrangements for acquiring more thorough site information before contract award (para. 3.29(c));**

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Adoption of alternative designs

- (f) **critically consider inviting tenderers to submit alternative designs at the tender stage where there is a potential for better value for money (para. 4.18(a)(i));**
- (g) **in accepting alternative designs after contract award, agree with the contractor over the terms of implementing the alternative-design works before the works commence (para. 4.18(a)(ii)); and**

Utilisation of TCR

- (h) **enhance vigilance in conducting and presenting traffic forecasts with a view to making traffic-flow estimations as accurately as possible (para. 5.10).**

Response from the Administration

15. The Administration agrees with the audit recommendations.