# ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

**HEAD 706 – HIGHWAYS** 

Transport - Roads

582TH - Central Kowloon Route - consultants' design fees and site investigations

Members are invited to recommend to Finance Committee to expand the scope and to increase the approved project estimate for **582TH** from \$99.0 million by \$93.3 million to \$192.3 million in money-of-the-day prices.

#### **PROBLEM**

The approved project estimate (APE) of **582TH** is not sufficient to cover the cost of the works under the project.

#### **PROPOSAL**

2. The Director of Highways (DHy), with the support of the Secretary for the Environment, Transport and Works, proposes to change the scope of **582TH** to cover the expansion from dual two-lane configuration to a longer dual three-lane configuration for the Central Kowloon Route (CKR) and to increase the APE from \$99.0 million by \$93.3 million to \$192.3 million in money-of-the-day (MOD) prices.

#### PROJECT SCOPE AND NATURE

3. The approved scope of **582TH** comprises the detailed design consultancy and associated site investigations for the CKR project adopting a dual two-lane configuration. In 1999, we completed the engineering review and the associated site investigations for this original scheme of CKR (hereinafter referred to as the first consultancy agreement and the first site investigation contract). The revised scope of **582TH** comprises the detailed design consultancy and associated site investigations for CKR in dual three-lane configuration and longer length, with due regard to the preservation of historical buildings in the affected areas.

#### **JUSTIFICATION**

#### The need for CKR

- 4. The east-west traffic movements across central Kowloon are primarily served by Lung Cheung Road, Boundary Street, Prince Edward Road West, Argyle Street, Waterloo Road, Gascoigne Road Flyover (GRF) and Chatham Road North. Most of these routes are already operating at full capacity at peak hours. Apart from Lung Cheung Road and GRF, the rest of these existing east-west road links have frequent frontage accesses and signal controlled junctions, which are constraining the traffic flows of these road links.
- 5. The proposed CKR will connect West Kowloon with the proposed Kai Tak Development and the road network in Kowloon Bay. It will provide a new strategic road link across central Kowloon and relieve traffic congestion at peak hours on the existing east-west road links. The projected volume to capacity (V/C) ratios<sup>1</sup> of major east-west road links in 2016 without the CKR, are as follows –

/V/C .....

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A v/c ratio is normally used to reflect traffic situation during peak hours. A v/c ratio below 1.0 is considered acceptable. A v/c ratio above 1.0 indicates the onset of mild congestion and a v/c ratio between 1.0 and 1.2 would indicate a manageable degree of congestion. A v/c ratio above 1.2 indicates the onset of more serious congestion.

V/C Ratio	Without CKR nor the widened GRF		
V/C Ratio	2016		
GRF <sup>2</sup>	>1.3		
Chatham Road North	>1.3		
Lung Cheung Road	1.3		
Waterloo Road	1.3		
Other major roads parallel to CKR <sup>3</sup>	1.2		

## The proposed increase in APE

- 6. The original scheme was a 3.9-kilometre (km) trunk road with about 2.6 km of dual two-lane tunnel connecting the existing Yau Ma Tei Interchange in the west and the proposed road network under the previous South East Kowloon Development (SEKD) (now known as Kai Tak Development) in the east. Owing to changes in the SEKD scheme in the past years, we need to revise the alignment of CKR. We also consider it necessary to adopt a dual three-lane configuration to meet the anticipated traffic demands between east and west Kowloon. The original alignment and an indicative alignment of the currently proposed CKR together with some typical cross-sections of the tunnel sections are in **Enclosure 1**.
- 7. We have already spent \$56.3 million on the engineering review of the original CKR scheme and its associated site investigations under **582TH**. Following the recent changes to the SEKD, we consider it necessary to expand the scope and increase the APE of **582TH** from \$99.0 million by \$93.3 million to \$192.3 million to cover the additional cost arising from the following
  - (a) change in alignment which results in an increase in the length of CKR and its tunnel section by about 21% and 46% respectively;

/(b) .....

The existing GRF runs through Yau Ma Tei Multi-storey Carpark Building (YMTMCB). With the demolition of YMTMCB under the CKR project, we undertake to investigate the feasibility of the widening of GRF from single two-lane to dual two-lane standard under a separate project. We plan to complete the widening works in association with CKR in 2016.

Other major routes parallel to CKR include Argyle Street, Boundary Street and Prince Edward Road West.

- (b) change in the lane configuration from dual two-lane to dual three-lane; and
- (c) use of immersed tube tunnel for the portion across the water of Kowloon Bay.

Details of the increase in cost are set out in paragraphs 8 to 11 below.

## Change in alignment

To cope with the changes in the then SEKD scheme (see paragraph 28 below), the Highways Department commenced an alternative alignment study focusing on the alignment of CKR to the east of Ho Man Tin in August 1999. Subsequently, a conceptual scheme indicating a possible alignment passing through the bus terminus at Kowloon City Ferry Pier to match with the revised SEKD scheme was formulated. This indicative alignment allows the tunnel to run at a greater depth within the bedrock stratum, thus substantially reducing the effects of tunnel construction on existing buildings, roads and services in the To Kwa Wan area. It can accommodate the tunnel in a conventional side-by-side configuration, and is capable of expanding to dual three-lane without involving significant additional land resumption or reprovisioning requirement in To Kwa Wan areas. The approximate length of this conceptual CKR scheme is about 4.7 km, of which approximately 3.8 km will be in the form of a tunnel. The length of this CKR scheme and the tunnel section is longer than its original alignment by about 21% and 46% respectively. The pre-construction works on this revised indicative alignment will result in an additional cost of about \$47.4 million.

#### Change in lane configuration from dual two-lane to dual three-lane

9. In April 2002, the Transport Department conducted a traffic review on the original dual two-lane CKR scheme. The results indicated that the dual two-lane CKR would be operating above capacity during peak periods immediately after its opening. The need for a dual three-lane CKR was confirmed in September 2006. The projected volume to capacity (V/C) ratios of major east-west road links in 2016 and 2021, with CKR in dual two-lane and in dual three-lane configuration, are as follows –

V/C Ratio		-lane CKR lened GRF	Dual three-lane CKR with widened GRF		
V/C Rauo	2016	2021	2016	2021	
CKR	1.1	1.2	0.9	0.9	
GRF	1.0	1.1	0.9	0.9	
Chatham Road North	0.9	1.0	0.9	0.9	
Lung Cheung Road	1.0	1.1	1.0	1.0	
Waterloo Road	1.0	1.1	1.0	1.1	
Other major roads parallel to CKR <sup>4</sup>	0.9	1.0	0.9	0.9	

10. Given the one-off opportunity to build this major route across the Kowloon Peninsula, we propose to adopt a dual three-lane tunnel configuration to cope with the anticipated traffic demand. The studies on the change of lane configuration will result in an additional cost of about \$27.5 million.

#### Use of immersed tube tunnel

11. In the light of the judgment of the Court of Final Appeal (CFA) on 9 January 2004 regarding the Protection of Harbour Ordinance (Cap. 531)<sup>5</sup>, the Administration undertook to re-plan the Kai Tak Development and review the relevant works proposals including the concerned portion of CKR to ensure that the development would be in full compliance with the CFA requirements. In order to avoid reclamation, our present proposal is to build underneath the seabed the portion of CKR in Kowloon Bay between Kowloon City Ferry Pier and Kai Tak Runway in the form of an immersed tube tunnel. The pre-construction works relating to the immersed tube tunnel will result in an additional cost of about \$14.2 million.

/Scope .....

Other major routes parallel to CKR include Argyle Street, Boundary Street and Prince Edward Road West.

CFA clarified that the presumption against reclamation in section 3 of the Protection of Harbour Ordinance could only be rebutted if a single test, that was, "the overriding public need test", could be satisfied. Public needs are community needs and include the economic, environmental and social needs of the community. A need should only be regarded as overriding if it is a compelling and present need and there is no reasonable alternative to reclamation.

# Scope of consultancy studies

- 12. The scope of the consultancy studies will cover the investigation, impact assessments and design of CKR and will include the following major tasks
  - (a) to review the previous alignment proposals and develop new alignment options for CKR. Amongst the new alignment options to be developed, an option which allows the preservation of the Yau Ma Tei Police Station will be studied:
  - (b) to examine the impacts and requirements associated with the various alignment options, paying due regard to the need for the preservation or reprovisioning of the affected community facilities<sup>6</sup>, and the possible impact on the private properties. The future land use planning in respect of areas affected by the project and the need for area wide traffic management measures will also be explored in the study;
  - (c) to consider the social impacts arising from the adoption of the various alignment options and their associated reprovisioning arrangements. The performance of different viable combinations of alignment and reprovisioning options will be conducted in terms of economic, social and environmental aspects, paying particular attention to the preservation of built heritages and local culture;
  - (d) to conduct comprehensive consultation with the respective District Councils, local communities, hawkers representatives, professional bodies and academics having interest in the project, with an aim to collect views to develop a preferred alignment scheme for CKR; and
  - (e) to commence the detailed design for CKR upon the acceptance of a final alignment scheme by the community in large.

/13. .....

We will also take the local "Yung Shu Tau" culture into consideration in developing the options.

13. Subject to approval, we plan to employ consultants to start the studies in August 2007. We will strive to complete the detailed design in 2012 to enable construction of the CKR to commence in 2012 for completion by 2016. We will consult the public and the LegCo again before seeking funding for the construction of CKR.

#### **Overall Review**

14. A breakdown of the proposed increase of \$93.3 million is as follows –

Add	Factors itional costs associated with –	Proposed increased amount in MOD prices (\$ million)	% of the total increased amount
(a)	change of alignment with an increase in the length of CKR and its tunnel by about 21% and 46% respectively	47.4	50.8%
(b)	change of lane configuration from dual two-lane to dual three-lane	27.5	29.5%
(c)	use of immersed tube tunnel for the portion across the waters of Kowloon Bay	14.2	15.2%
(d)	adjustment of contingencies	4.27	4.5%
	Total	93.3	100.0

/A .....

The original contingencies in the APE are \$8.2 million. The increase of \$4.2 million is for a total of \$12.4 million allowed for the remaining works.

A comparison of the cost breakdown of the APE and the revised project estimate in MOD prices, together with reasons leading to the proposed increase in the APE, is at **Enclosure 2**. A breakdown of the estimate for consultants' fees is at **Enclosure 3**.

#### FINANCIAL IMPLICATIONS

15. Subject to approval, we will revise the phasing of the expenditure as follows –

\$ million (MOD)
56.3 <sup>8</sup>
6.3
26.2
34.2
30.9
28.6
9.8
192.3

16. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2007 to 2013. We will employ consultants to carry out the investigation, impact assessments and design on lump-sum basis, with provision for price fluctuation as the duration of the consultancies will exceed 12 months. The consultants will supervise the site investigation works under contracts to be awarded in the investigation and detailed design stages through a competitive tendering process.

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This is the actual expenditure up to 31 March 2006.

17. The proposed design and site investigation works will not give rise to any recurrent expenditure.

#### **PUBLIC CONSULTATION**

- 18. We informed the LegCo Panel on Transport in June 2001 of the revised alignment for CKR. We then consulted the Panel on the revised alignment and dual three-lane configuration of CKR on 26 April 2002. Members supported the revised alignment and dual three-lane configuration of CKR.
- Tsim Mong (YTM) District Council (DC), Kowloon City DC and Kwun Tong DC on 7 September, 28 September and 19 October 2006 on the revised alignment respectively. All three supported the implementation of the CKR project. We also informed YTMDC Traffic and Transport Committee (T&TC) of the government and institutional facilities likely to be affected by the indicative alignment of CKR and the preliminary reprovisioning arrangement for them. The government and community facilities that are likely to be affected by the current indicative alignment of CKR are shown in **Enclosure 4**. Some YTMDC members expressed concerns on preservation of Yau Ma Tei Police Station and relocation of the affected facilities.
- 20. We consulted the LegCo Panel on Transport again on 24 November 2006. Members supported the proposed increase in APE for the project.
- 21. We further briefed YTMDC T&TC on 11 January 2007 in response to their enquiry on the progress of CKR. We reiterated that due to the change in configuration from dual two-lane to dual three-lane, additional funding would be required for the consultancy studies. The studies would proceed upon availability of the additional funding and the views expressed by the T&TC in the previous consultation would be taken into account. YTMDC T&TC members also requested a comprehensive consultation to be carried out when the additional funding is available. We informed the T&TC that they would be consulted from time to time throughout the studies. YTMDC T&TC supported the CKR project and urged for early implementation.

#### **ENVIRONMENTAL IMPLICATIONS**

- 22. CKR is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). An environmental permit is required for the construction and operation of the project. We will carry out an EIA study and submit the EIA report to the Director of Environmental Protection for approval under the EIA Ordinance.
- As a statutory requirement, the EIA will include a built heritage impact assessment. The EIA will look at alternative alignment options with an emphasis given to the avoidance and/or minimization of adverse impacts on the built heritage to the maximum practicable extent, including Yau Ma Tei Police Station, and to address the concern of the public and members of the Advisory Council on the Environment. The study will have to demonstrate that all reasonable efforts have been made to avoid damage or demolition of the heritage items through modification of layout and design of the project before recommending mitigation measures.
- 24. The proposed design work will not give rise to any adverse environmental implications. We will implement standard environmental pollution control measures to manage the environmental impacts of the associated site investigation works. The site investigation works will only generate a negligible amount of construction and demolition (C&D) materials. We will require the design consultants to fully consider measures to minimise the generation of C&D materials and to reuse/recycle C&D materials as much as possible in the future implementation of the CKR.

#### LAND ACQUISITION

25. The proposed design and site investigation works do not require any land acquisition. However, land acquisition may be required for the construction of the CKR project. We will ascertain the details of the land requirements in the detailed design stage.

#### **BACKGROUND INFORMATION**

26. In April 1998, Finance Committee approved the upgrading of **582TH** "Central Kowloon Route – consultants' design fees and site investigations" to Category A at an estimated cost of \$99.0 million in MOD prices.

- 27. We started the engineering review of CKR in its original alignment and dual two-lane configuration in June 1998 and the review was completed in September 1999.
- 28. In September 1998, when the engineering review of CKR was underway, the Administration gazetted the original SEKD scheme under the Town Planning Ordinance (Cap. 131). In response to the public's views, the Administration prepared an outline concept plan in June 1999 for the revised scheme of SEKD reducing the extent of reclamation from 299 to 161 hectares. In the light of this revised scheme, we started studying an alternative alignment for CKR in August 1999 and identified the option which passes through the bus terminus at Kowloon City Ferry Pier to match with the revised SEKD scheme.
- 29. Subsequent to the judgement of the Court of Final Appeal in January 2004, the Kai Tak Planning Review was commissioned in July 2004, with "no reclamation" as the starting point. The Kai Tak Planning Review concluded that part of CKR would be built in the form of an immersed tube tunnel across the waters of Kowloon Bay to avoid reclamation.
- 30. We submitted paper PWSC(2006-07)51 seeking increase in APE for 582TH to this Subcommittee for discussion on 19 December 2006. Members, though supporting the development of transport infrastructure, expressed concerns on the preservation of built heritage, particularly the Yau Ma Tei Police Station. The item was put to vote and was negatived. To address Members' concerns, we have provided additional information on the scope of the proposed consultancy studies and public consultation in this paper (see paragraph 12 and 13 above).
- 31. The proposed design and site investigation works will not involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the investigation and design stages of the project. We will also incorporate tree planting proposals, where possible, when the CKR project is implemented.

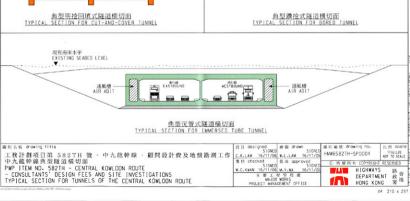
We estimate that the proposed increase in APE for the remaining work of **582TH** will create about 170 jobs (90 for labourers and another 80 for professional/technical staff), providing a total employment of 2 900 man-months. We also estimate that the construction work for the CKR project will create about 4 100 jobs (3 300 for labourers and another 800 for professional/technical staff), providing a total employment of 182 000 man-months.

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Environment, Transport and Works Bureau February 2007

主要工程管理者 WAJOR WORKS PROJECT MANAGEMENT OFFICE

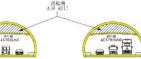
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# 582TH - Central Kowloon Route - consultants' design fees and site investigations

A comparison of the APE and the revised project estimate in MOD prices is as follows –

	(i) APE Break- down <sup>1</sup>	(ii) First Consultancy Agreement and First Site Investigation Contract  (a) (b) Revised Actual Estimate Expend-		(iii) Estimate for Remaining Work	(iv) Revised Total Estimate (ii)(b)+(iii)	(v) Difference (iv) – (i)
	(\$M)	(based on tender sums) (\$M)	iture <sup>2</sup> (\$M)	(\$M)	(\$M)	(\$M)
(a) Consultants' fees  (i) Review (including the engineering review in the first consultancy agreement, investigation, impact assessments and preliminary design)	63.3	63.9 <sup>3</sup> 31.8	36.7	76.5	50.7	49.9 35.7
(ii) Detailed design	42.8	27.4	-	50.6	50.6	7.8
(iii) Preparation of tender document	3.4	2.6	-	4.9	4.9	1.5
(iv) Supervision of site investigations	2.1	2.14	2.7	4.3	7.0	4.9

<sup>&</sup>lt;sup>1</sup> This is inclusive of the inflation allowance, which is spread over different items of work and contingencies.

This is the total final payment for the first consultancy agreement and the first site investigation contract. Due to the change in project scope and the deviation from the original implementation programme for CKR, DHy terminated the first consultancy agreement in 2002.

This is based on the breakdown of manpower input in the consultants' bid for the first consultancy agreement.

This amount represents the provision for supervision of site investigations comprising a sum of \$1.5 million for engineering review and another sum of \$0.6 million for detailed design.

	(i) APE Break- down <sup>1</sup>	(ii) First Consultancy Agreement and First Site Investigation Contract		(iii) Estimate for Remaining Work	(iv) Revised Total Estimate (ii)(b)+(iii)	(v) Difference (iv) – (i)
	(\$M)	(a) Revised Estimate (based on tender sums) (\$M)	(b) Actual Expend- iture <sup>2</sup>	(\$M)	(\$M)	(\$M)
(b) Site investigations	27.5	27.55	19.6	47.1	66.7	39.2
(c) Contingencies	8.2	7.6 <sup>6</sup>	-	12.4	12.4	4.27
Total	99.0	99.0	56.3	136.0	192.3	93.3

- 2. As regards (a)(i) (consultants' fees for review), the total increase of \$35.7 million comprises
  - (i) an increase of \$19.0 million due to the higher than expected consultants' fees for the completed engineering review for the original alignment and review of the alternative alignment; and
  - (ii) an increase of \$16.7 million due to the change in CKR scheme as mentioned in paragraphs 8 to 11 of the paper.
- 3. As regards (a)(ii) (consultants' fees for detailed design), the increase of \$7.8 million results from an increase of \$23.2 million for the detailed design due to the change in CKR scheme as mentioned in paragraphs 8 to 11 of the paper.
- 4. As regards (a)(iii) (consultants' fees for preparation of tender document), the increase of \$1.5 million results from an increase of \$2.3 million due to the change in CKR scheme as mentioned in paragraphs 8 to 11 of the paper.

This comprises the estimated cost of \$20.1 million based on the first site investigation contract and another sum of \$7.4 million for further site investigation at detailed design stage.

It represents a drawdown of \$0.6 million from the contingencies to offset the higher consultants' fees based on the tender sums of the first consultancy agreement.

This represents a sum of \$4.2 million for the increase in the original contingencies, as mentioned in paragraph 14(d) of the paper.

- 5. As regards (a)(iv) (consultants' fees for supervision of site investigations), the increase of \$4.9 million results from an increase of \$1.2 million for the supervision of the completed site investigation works due to higher than expected fees in the first consultancy agreement and an increase of \$4.3 million for remaining work, offset by the unspent fee of \$0.6 million allowed for detailed design stage.
- 6. As regards **(b)** (**site investigations**), the total increase of \$39.2 million comprises-
  - (i) an increase of \$30.0 million due to additional site investigations on land required for the changes in alignment and lane configuration of the CKR; and
  - (ii) an increase of \$9.2 million due to marine site investigations required for the design of the immersed tube tunnel.
- 7. As regards (c) (contingencies), we allow a sum of \$12.4 million as contingencies associated with the remaining work.

# 582TH – Central Kowloon Route – consultants' design fees and site investigations

# Breakdown of estimate for remaining consultants' fees (in MOD prices)

Con	sultants' staff costs	Estimated fee (Note 1) (\$million)			
(a)	Investigation, impact assessments and preliminary design	16.7			
(b)	Detailed design	50.6			
(c)	Preparation of tender document and assessment of tenders	4.9			
(d)	Supervision of site investigations	4.3			
	Total consultants' staff costs	76.5			
Out-of-pocket expenses (Note 2)					
	Site investigations	47.1			
	Total	123.6			

### Notes

- 1. The figures given above are based on estimates prepared by the Director of Highways. We will know the actual man-months and actual fees only when we have selected the consultants through the usual competitive lump-sum fee bid system.
- 2. Out-of-pocket expenses are the actual costs incurred. The consultants are not entitled to any additional payment for overheads or profit in respect of these items.

