ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 707 – NEW TOWNS AND URBAN AREA DEVELOPMENT Transport – Roads 823TH – Tseung Kwan O – Lam Tin Tunnel

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **823TH**, entitled "Tseung Kwan O Lam Tin Tunnel detailed design and site investigation", to Category A at an estimated cost of \$196.0 million in moneyof-the-day prices; and
- (b) the retention of the remainder of **823TH** in Category B.

PROBLEM

At present, the Tseung Kwan O (TKO) Tunnel is congested during peak hours and it is envisaged that the TKO Tunnel cannot cope with the anticipated traffic demand as TKO is further developed.

/PROPOSAL

PROPOSAL

2. The Director of Civil Engineering and Development, with the support of the Secretary for Transport and Housing, proposes to upgrade part of **823TH** to Category A at an estimated cost of \$196.0 million in money-of-the-day (MOD) prices to undertake the detailed design and associated site investigation works for the Tseung Kwan O – Lam Tin Tunnel (TKO–LT Tunnel).

PROJECT SCOPE AND NATURE

- 3. We propose to upgrade part of **823TH** to Category A, comprising
 - (a) detailed design of the works described in paragraph 5 below;
 - (b) associated site investigation works and supervision;
 - (c) preparation of tender documents and assessment of tenders for the associated site investigation works; and
 - (d) preparation of tender documents and assessment of tenders for the future construction works of TKO-LT Tunnel.

A plan showing the location of the TKO-LT Tunnel is at Enclosure 1.

- 4. Subject to funding approval from the Finance Committee (FC), we plan to start the proposed detailed design and associated site investigation works in November 2013 for completion in December 2016.
- 5. We will retain the remainder of **823TH** in Category B, for which we will seek funding to dovetail with the implementation programme of the project. The scope of the remainder comprises
 - (a) construction of a dual two-lane highway, approximately 4.2 kilometres (km) long (of which about 2.6 km is in the form of tunnel) connecting Po Shun Road of TKO in the east with Eastern Harbour Crossing (EHC) and Cha Kwo Ling Road of Kwun Tong in the west;

- (b) construction of slip roads, depressed roads¹, viaducts, TKO Interchange, ventilation building for the tunnel, tunnel portal facilities and reclamation of about 3 hectares of land to construct the depressed roads at TKO;
- (c) construction of slip roads, branch tunnels, viaducts, Lam Tin Interchange, tunnel portal facilities, ventilation and administration buildings at Kwun Tong; and
- (d) implementation of the associated building, civil, structural, marine, electrical and mechanical, traffic control and surveillance system, landscaping, as well as environmental protection and mitigation works.

JUSTIFICATION

Resolving traffic problem

- 6. With the gradual completion of new residential housing developments, the population of TKO district is continuously increasing. This will aggravate the traffic load of TKO district. TKO residents and the local community have been expressing their expectation on the early implementation of the TKO-LT Tunnel by the Administration.
- 7. At present, the TKO Tunnel (location plan at Enclosure 2) is the main connection between TKO district and East Kowloon. Traffic congestions have already occurred during peak hours. Its volume/capacity (v/c) ratio² is

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Volume/capacity (v/c) ratio is an indication of the traffic conditions of roads during peak hours. A v/c ratio equals to or less than 1.0 is considered acceptable. A v/c ratio between 1.0 and 1.2 indicates a manageable degree of congestion. A v/c ratio above 1.2 indicates more serious congestion. The anticipated v/c ratios at the TKO Tunnel during peak hours with and without the TKO-LT Tunnel are as follows –

Year	Anticipated v/c ratios at TKO Tunnel during peak hours		
	Without TKO-LT Tunnel	With TKO-LT Tunnel	
2016	1.16	_	
2021	1.38	0.86	
2026	1.38	0.88	

Depressed road design can minimise the traffic noise impacts.

around 1.14. According to the traffic impact assessment of the "investigation and preliminary design study" of the TKO-LT Tunnel completed in 2012, it was envisaged that the congestion during peak hours at TKO Tunnel would worsen in 2021, with the v/c ratio and queue length (measured from toll plaza) of Kowloon-bound traffic during peak hours reaching 1.38 and 2.9 km respectively. It is estimated that the travelling time from TKO to Kowloon will increase by around 15 minutes because of traffic congestion. The above data indicates that the traffic volume of the existing TKO Tunnel will continue to increase and its capacity would not be able to cope with the estimated traffic volume in year 2021.

- 8. We therefore need to construct the TKO-LT Tunnel to meet the traffic demand resulting from the anticipated population increase. After the completion of the TKO-LT Tunnel, it is anticipated that the v/c ratio during peak hours at TKO Tunnel can be reduced from 1.38 to 0.86 in 2021. Under normal traffic conditions, the travelling time from TKO Town Centre to the toll plaza of EHC will decrease from 12 minutes to 3 minutes.
- 9. For the Kwun Tong district, the TKO-LT Tunnel will also improve the traffic conditions within the district and relieve the extra traffic load to be brought about by the future development of the district. After completion of the project, part of the existing traffic between TKO and EHC can use the TKO-LT Tunnel without routing through TKO Road and Lei Yue Mun Road etc. of the Kwun Tong district, thus significantly relieving the heavy traffic load at these roads during peak hours. In addition, with the spare capacity of TKO Road resulting from the commissioning of the TKO-LT Tunnel, TKO Road can cope with the future developments in Kwun Tong district, including the proposed housing development in the vicinity of Anderson Road.

Design for greening and integration with environment

10. In addition to improving the traffic condition, we will include environmental mitigation measures in the construction scheme of the TKO-LT Tunnel to minimise the environmental impact on the areas along the alignment. We propose to construct the main carriageways of the Lam Tin Interchange at around 20 metres below the adjacent ground level and cover it with a landscape deck and light green-coloured noise enclosures. Moreover, a variety of measures will be implemented on the slip roads of the Interchange, such as being constructed in tunnel form, hidden between cut-slopes or provided with noise barriers/enclosures, so as to alleviate noise and visual impacts as well as light nuisance.

11. Besides, we propose to adopt a tunnelling scheme at Cha Kwo Ling Village to avoid any works at the ground level. This can maintain the integrity of the village community and does not involve any resumption or clearance of squatters/buildings. Furthermore, the proposed tunnel alignment will not affect the local landmarks including Cha Kwo Ling Tin Hau Temple and the former Four Hills Public School.

FINANCIAL IMPLICATIONS

12. We estimate the cost of the proposed detailed design and associated site investigation works to be \$196.0 million in MOD prices (please see paragraph 13 below), broken down as follows –

		\$ million			
(a)	Consultants' fees for		93.8		
	(i) detailed design and supervision of site investigation works	88.6			
	(ii) preparation of tender documents and assessment of tenders	5.0			
	(iii) management of resident site staff for site investigation works	0.2			
(b)	Remuneration of resident site staff for site investigation works		4.8		
(c)	Site investigation works		50.0		
(d)	Contingencies		14.9		
	Sub-total		163.5	(in September 2012 prices)	
(e)	Provision for price adjustment		32.5		
	Total		196.0	(in MOD prices)	

Due to insufficient in-house human resources, we propose to engage consultants to carry out the detailed design and supervision of site investigation works. A breakdown by man-months of the estimates for consultants' fees and resident site staff costs is at Enclosure 3.

13. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2012)	Price adjustment factor	\$ million (MOD)
2013 – 2014	7.0	1.06250	7.4
2014 – 2015	66.0	1.12625	74.3
2015 – 2016	45.3	1.19383	54.1
2016 – 2017	21.5	1.26545	27.2
2017 – 2018	10.5	1.34138	14.1
2018 – 2019	9.0	1.41180	12.7
2019 – 2020	4.2	1.48239	6.2
	163.5		196.0

- 14. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2013 to 2020. We will tender the proposed detailed design consultancy on a lump sum basis with provision for price adjustment. We will tender the proposed site investigation works under a standard re-measurement contract after funding approval because the quantity of works involved may vary depending on actual ground conditions. The works contract will provide for price adjustment.
- 15. The proposed detailed design and associated site investigation works will not give rise to any recurrent consequences.

PUBLIC CONSULTATION

- 16. We commenced the "investigation and preliminary design study" in early 2009, and have subsequently carried out a public engagement (PE) exercise comprising three different stages, discussing topics that were of public concern and exploring different design options. Taking into account public views collected in the PE exercise, environmental factors and engineering considerations, we have developed the optimum preliminary design of the TKO-LT Tunnel.
- 17. We consulted the Sai Kung District Council and Kwun Tong District Council in January 2013. Both supported the proposed project and urged for its early implementation. We would maintain close dialogue on the progress of the project with the concerned parties during the detailed design stage.
- 18. We consulted the Legislative Council Panel on Transport on 22 February 2013. Panel Members in general supported the project.

ENVIRONMENTAL IMPLICATIONS

- 19. The proposed detailed design and associated site investigation works are not a designated project under the Environmental Impact Assessment (EIA) Ordinance (Chapter 499) and will not cause any long-term environmental impact. We have included in the project estimate the cost of implementing suitable mitigation measures to control short term environmental impact during the site investigation works.
- 20. The proposed site investigation works will only generate very little construction waste. We will require the consultants to comprehensively examine measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible during the construction stage in future.
- 21. The proposed TKO-LT Tunnel is a designated project under Schedule 2 of the EIA Ordinance. The Administration will need to apply for an environmental permit for the construction and operation of the project at appropriate time. We have carried out an EIA study and have submitted the EIA report to the Director of Environmental Protection for approval under the EIA Ordinance. We will follow the statutory procedures, including the provision of the EIA report for inspection and comment by the public and the Advisory Council on the Environment, by mid 2013.

HERITAGE IMPLICATIONS

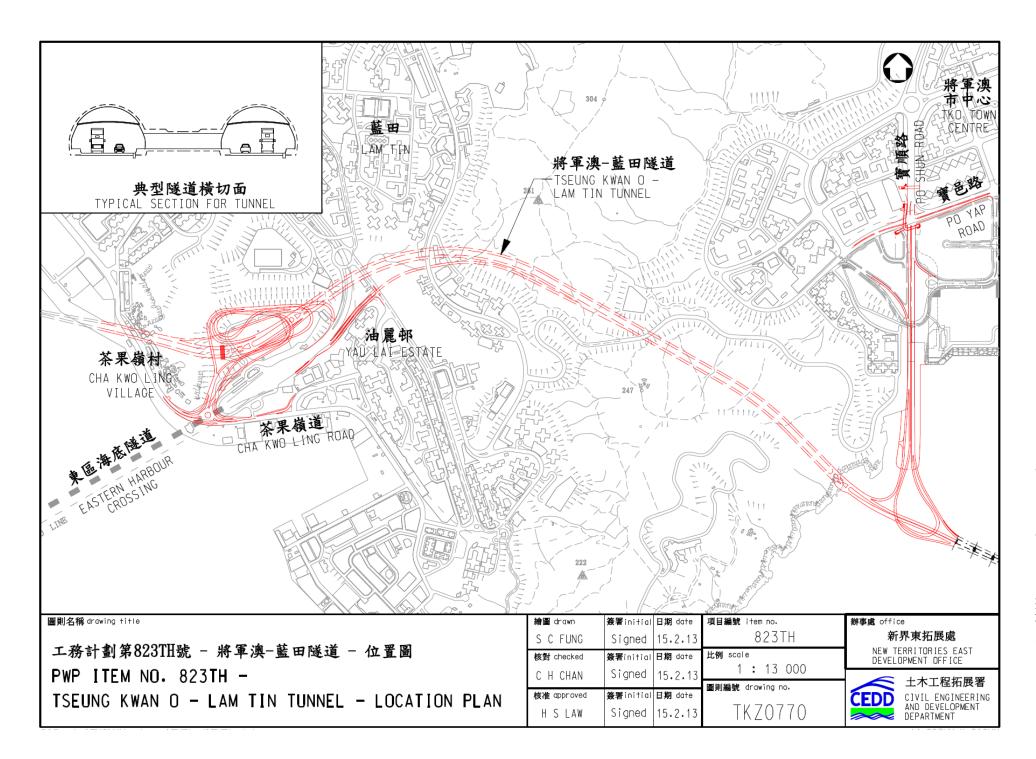
22. The proposed detailed design and associated site investigation works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

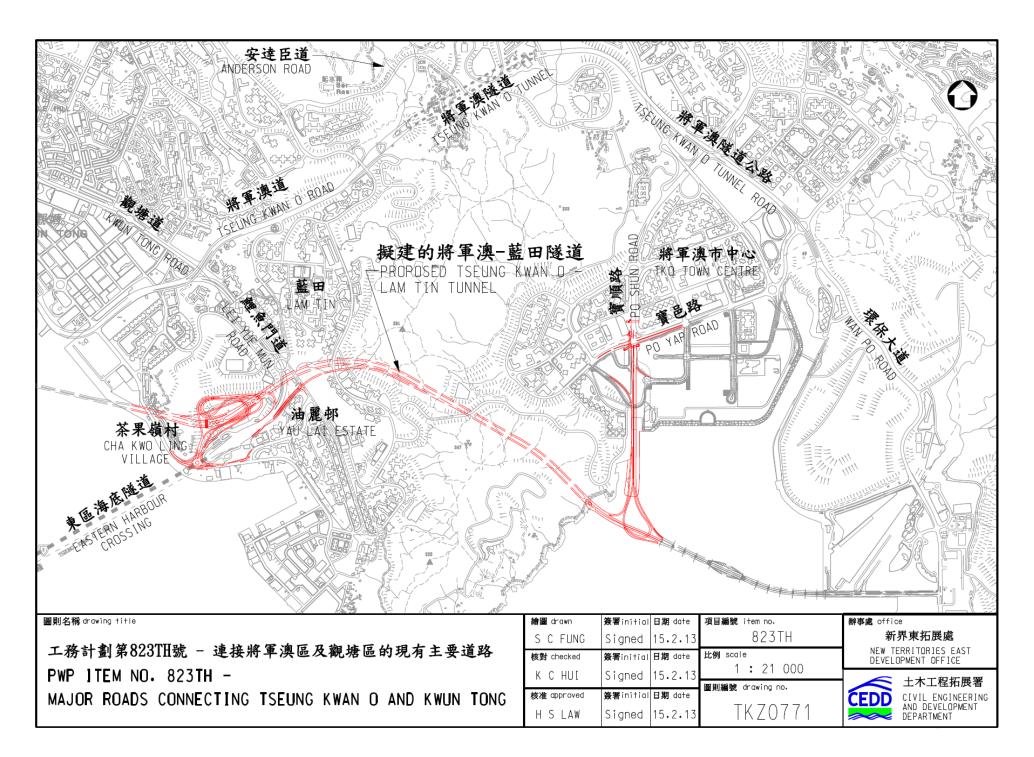
LAND ACQUISITION

23. The proposed detailed design and associated site investigation works do not require any land acquisition.

BACKGROUND

- 24. We upgraded **823TH** to Category B in April 2007.
- 25. On 9 January 2009, the FC approved upgrading part of **823TH** to Category A as **827TH** "Tseung Kwan O Lam Tin Tunnel investigation and preliminary design" at an approved project estimate of \$198.9 million in MOD prices for engaging consultants to undertake the preliminary design of the TKO–LT Tunnel and for the associated site investigation works. The concerned work has been substantially completed.
- 26. The proposed detailed design and associated site investigation works will not directly involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the detailed design stage of the project. We will also incorporate tree planting proposals in the construction phase.
- 27. We estimate that the proposed detailed design and associated site investigation works will create about 73 jobs (29 for labourers and another 44 for professional/technical staff) providing a total employment of 1 500 man-months.





823TH (Part) – Tseung Kwan O – Lam Tin Tunnel

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2012 prices)

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees (\$ million)
(a) Consultants' fees for –					
(i) Detailed design and supervision of site investigation works ^(Note 2)	Professional Technical	490 539	38 14	2.0 2.0	64.4 24.2
(ii) Preparation of tender documents and assessment of tenders ^(Note 2)	Professional Technical	28 30	38 14	2.0 2.0	3.7 1.3
				Sub-total	93.6
(b) Resident site staff (RSS) costs ^(Note3)	Professional Technical	29 55	38 14	1.6 1.6	3.0 2.0
Comprising –				Sub-total	5.0
(i) Consultants' fe management of RSS investigation works			0.2		
(ii) Remuneration of RS responsible for site inveworks				4.8	
				Total	98.6

^{*} MPS = Master Pay Scale

Notes

- 1. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff costs of consultants' staff, including overheads and profit, as the staff will be employed in the consultants' offices. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of resident site staff supplied by the consultants. (At present, MPS point 38 = \$65,695 per month and MPS point 14 = \$22,405 per month.)
- 2. The actual man-months and fees will only be known when we have selected the consultants through the usual competitive bid system.
- 3. The actual man-months and fees will only be known after completion of the site investigation works.