For discussion **PWSC(2001-02)91**
on 19 December 2001

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS
Transport – Roads
745TH – Grade separation at Light Rail Transit junction LT1 at Tsing Lun Road, Tuen Mun

Members are invited to recommend to Finance Committee the upgrading of **745TH** to Category A at an estimated cost of $138.6 million in money-of-the-day prices for the construction of the grade separation works at Light Rail Transit junction LT1 at Tsing Lun Road, Tuen Mun.

PROBLEM

The existing capacity of the Light Rail Transit (LRT) junction LT1 at Tsing Lun Road, Tuen Mun, cannot cope with the forecast traffic demand.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport, proposes to upgrade **745TH** to Category A at an estimated cost of $138.6 million in money-of-the-day (MOD) prices for the grade separation works at LRT junction LT1 at Tsing Lun Road, Tuen Mun.

PROJECT SCOPE AND NATURE

3. The proposed scope of **745TH** comprises –

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(a) construction of a 260-metre double-track Light Rail (LR) viaduct across Tsing Lun Road;

(b) construction of a 50-metre covered footbridge equipped with two passenger lifts across Tsing Lun Road; and

(c) associated road reconstruction and realignment, drainage, landscaping and water works.

A site plan is at the Enclosure.

JUSTIFICATION

4. Tsing Lun Road is a carriageway serving the north west part of Tuen Mun. The section of the road in the vicinity of the LRT junction LT1 is a dual two-lane carriageway. The LRT junction LT1 intersects with Tsing Lun Road and is a signalised control junction with at-grade pedestrian crossing facilities. It is operating at a reserve capacity[1] (RC) of 76% to 78% during the morning and afternoon peak hours. The anticipated completion of the West Rail (phase 1) in end 2003 and the major housing development in Tuen Mun Area 54[2] near Siu Hong Court from 2007 will attract more traffic to Tsing Lun Road. The capacity of the LRT junction LT1 will become insufficient to cope with the forecast traffic demand. To support smooth and efficient traffic flow in the long term, we need to replace the LRT junction LT1 by the proposed LR viaduct and footbridge. According to the latest traffic forecast, the RC of the existing junction without the proposed grade separation works and the volume/capacity (V/C) ratios[3] of Tsing Lun Road with the grade separation works are as follows –

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[1] The performance of a traffic signal junction is indicated by its RC. A positive figure indicates that the junction is operating with spare capacity. A negative figure indicates that the junction is overloaded, thus resulting in traffic queues and longer delay time.

[2] Tuen Mun Area 54 is developed in two phases. The first phase will accommodate 990 public housing flats with a population of 3 000 by 2007. The second phase will accommodate 12 700 public housing flats with a population of 41 000 by 2008.

[3] Volume to capacity (V/C) ratio is an indicator which reflects the performance of a road. A V/C ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A V/C ratio above 1.0 indicates the onset of congestion; that above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increase in traffic.

	2001		2007		2011	
	AM	PM	AM	PM	AM	PM
RC without grade separation works	76%	78%	-15%	-11%	-23%	-20%
V/C Ratios of Tsing Lun Road with grade separation works	-	-	0.51	0.48	0.55	0.52

5. In the absence of the proposed works, the LRT junction LT1 will be operating at an RC of –11% to –23% in future years. With the provision of the grade separation works, Tsing Lun Road will be operating at a V/C ratio of 0.48 to 0.55. The traffic forecast indicates that the project is well justified for meeting the anticipated traffic demand.

6. The existing signalised at-grade pedestrian crossing at Tsing Lun Road near LRT junction LT1 runs in parallel to the LRT track and operates in the same phase with the LRT on green time. Since there are no other pedestrian links in the vicinity, there is a strong demand to maintain this crossing. If this crossing is left not grade-separated, even if the LRT track has been elevated on viaduct, the RC of the junction would still drop to about 0% to 2% in 2007, which is not desirable from the traffic point of view. We therefore need to construct the proposed footbridge to grade separate the pedestrian crossing. To enable people with disability to use the footbridge, we will provide lifts for the footbridge taking into account the limited space in the congested area.

7. We need to implement the construction works for **745TH** in phase with the West Rail (phase 1) viaduct in the vicinity, which is under construction by Kowloon-Canton Railway Corporation (KCRC) for completion in end 2003. The heavy construction works of the proposed LR viaduct and footbridge, if carried out after the operation of the adjoining West Rail (phase 1), would impose significant risk to the operations of the railway. We plan to entrust **745TH** to

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KCRC for implementation under the West Rail Contract No. CC-230[4] "Light Rail Civil, Permanent Way, Traction Power and Overhead Line" with a view to delivering the proposed works in a cost effective manner and improving the interface and co-ordination with the West Rail (phase 1) project.

8. To tie in with the construction programme of the West Rail (phase 1), we plan to commence construction of the proposed works in April 2002 for completion of heavy construction works before the commissioning of the West Rail (phase 1). We expect to complete the whole project in December 2004.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the project to be $138.6 million in MOD prices, made up as follows -

			$ million	
(a)	(i)	Viaduct	64.3	
	(ii)	Footbridge and lifts	23.9	
	(iii)	Road works, landscape, drainage and other associated works	19.5	
(b)	On-cost[5] payable to KCRC		17.8	
(c)	Contingencies		12.5	
		Sub-total	138.0	(in September 2001 prices)
(d)	Provision for price adjustment		0.6	
		Total:	138.6	(in MOD prices)

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[4] KCRC is implementing the West Rail Contract No. CC-230 to carry out LRT modification works at Tin Shui Wai and at Pui To Road, Tuen Mun, which are of similar nature to the proposed grade separation works.

[5] An on-cost at 16.5% of the project base cost (i.e. items (a)(i) to (a)(iii) in paragraph 9) will be payable to KCRC for undertaking the technical studies, design and construction supervision of the proposed works.

10. Subject to approval, we will phase the expenditure as follows -

Year	$ million (Sep 2001)	Price Adjustment Factor	$ million (MOD)
2002 – 2003	53.9	0.99700	53.7
2003 – 2004	38.0	1.00398	38.2
2004 – 2005	34.0	1.01101	34.4
2005 – 2006	12.1	1.01808	12.3
	138.0		138.6

11. We have derived the MOD estimate on the basis of Government's latest forecast of trend labour and construction prices for the period 2002 to 2006. The works for the proposed project will be included under KCRC's Contract No. CC-230. It is a lump-sum fixed-price contract with re-measurement items.

12. We estimate the additional annual recurrent expenditure arising from the proposed works to be $236,000.

PUBLIC CONSULTATION

13. We consulted the Railway Committee of the Tuen Mun District Council (TMDC) in conjunction with KCRC on the proposed works on 5 October 2000, 12 April 2001 and 7 June 2001. KCRC also consulted the Tuen Mun Rural Committee (TMRC) on 2 November 2000 and 9 May 2001, and briefed the Incorporated Owners of Siu Hong Court (phases 3 and 4) about the project in October 2000 and March 2001. The planned arrangements and details of the project were explained to TMDC and TMRC Members and the local residents to address their concerns regarding the temporary traffic arrangement and the environmental implications during construction, the noise impact from the operation of the proposed LR viaduct, as well as the provision of lifts for the proposed footbridge. They gave in-principle support to the proposed works.

14. We gazetted the proposed works under the Railways Ordinance and the Roads (Works, Use and Compensation) Ordinance on 17 August 2001 concurrently and received no objection. The Secretary for Transport authorized the execution of the proposed works under the Railways Ordinance on 24 October 2001 and under the Roads (Works, Use and Compensation) Ordinance on 29 October 2001.

15. We circulated a note to LegCo Panel on Transport for information at its meeting held on 14 December 2001.

ENVIRONMENTAL IMPLICATIONS

16. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance and an environmental permit is required for the construction and operation of the viaduct. In December 1999, the Advisory Council on the Environment endorsed the EIA report for the project. The Director of Environmental Protection approved the EIA report in January 2000 and issued the environmental permit under the EIA Ordinance in January 2001.

17. The EIA report concluded that the environmental impact of the project could be controlled within the criteria under the EIA Ordinance and the Technical Memorandum on the EIA Process. We shall implement the measures recommended in the approved EIA report and the conditions in the environmental permit. The measures include the installation of a solid parapet wall of 1.4 metres in height above the rail head along the full extent of the LR viaduct and the installation of noise absorptive lining on the parapet wall on the sides facing the rail tracks. These noise mitigation measures will help contain the noise level to established standards. An environmental monitoring and audit programme for the proposed works will also be incorporated into KCRC's Contract No. CC-230.

18. During the planning and design stages, we considered ways of reducing the generation of construction and demolition (C&D) materials as far as practicable. KCRC will require their contractors to submit Waste Management Plans (WMPs) for their approval within six weeks after the commencement of construction of the project. These will set out appropriate mitigation measures including the allocation of an area for waste segregation. KCRC will ensure that the day-to-day operations on site comply with the approved WMPs. They will

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also control the disposal of C&D materials in accordance with the approved WMPs. We estimate that the project will generate about 1 680 cubic metres (m^3) of C&D materials. Of these, KCRC will reuse 1 600m^3 (95%) of inert C&D materials as fill in public filling areas[6] and will segregate and dispose 80m^3 (5%) of C&D wastes on site and at landfills respectively. They will not reuse C&D materials on site. The notional cost of accommodating C&D waste at landfill sites is estimated to be $10,000 for this project (based on a notional unit cost[7] of $125/$m^3$). KCRC will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip ticket system. They will record the disposal, reuse and recycling of C&D material for monitoring purposes.

LAND ACQUISITION

19. The project does not require any land resumption or clearance.

BACKGROUND INFORMATION

20. We upgraded **745TH** to Category B of the Public Works Programme in September 2000.

21. We shall enter into an entrustment agreement for the proposed works with KCRC if and when the Finance Committee approves the funding request. KCRC will undertake the technical studies, design and construction supervision of the project under the entrustment agreement.

22. KCRC will, at their own costs, abandon the existing at-grade LR tracks and carry out the new LR track works with the provision of an interim at-grade LR track diversion during construction. The interim LR tracks will be aligned adjacent to the existing tracks. To minimize traffic disruption, KCRC will carry out temporary traffic management measures as and when necessary.

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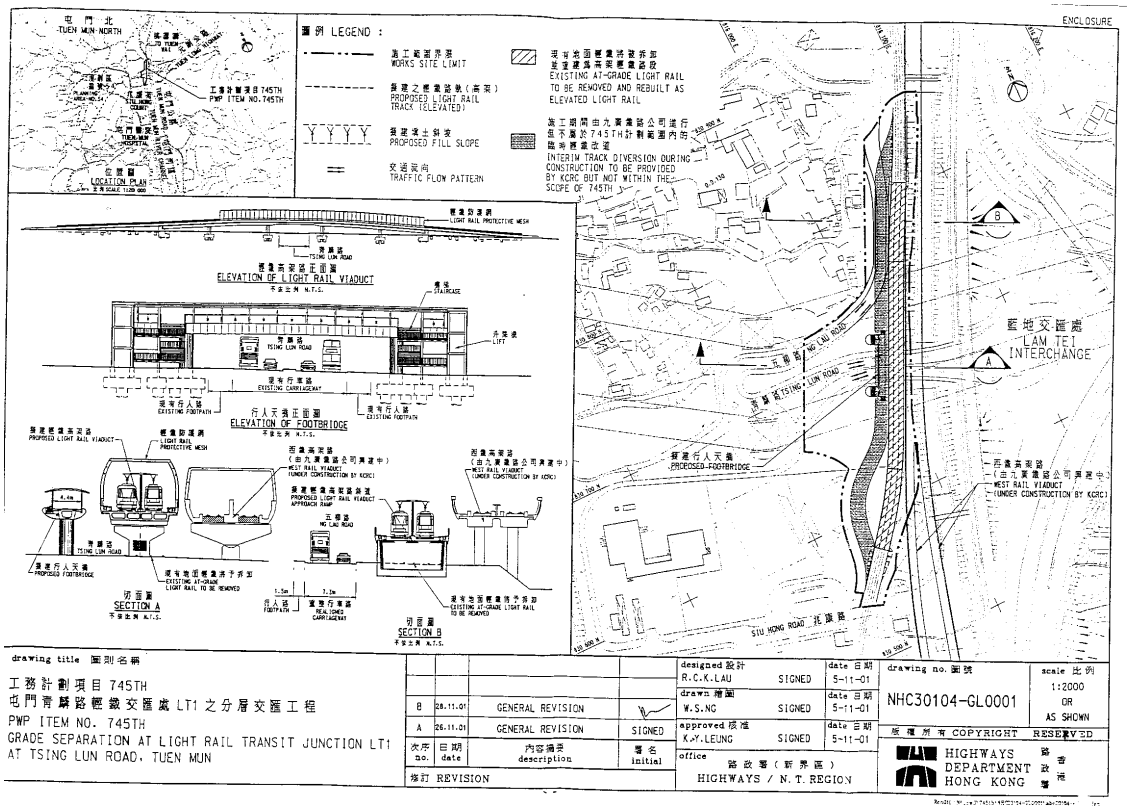
[6] A public filling area is a designated part of a development project that accepts public fill for reclamaton purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

[7] This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at $90/$m^3$), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled The notional cost estimate is for reference only and does not form part of this project estimate.

23. We estimate that the project will create some 75 jobs comprising 15 professional/technical staff and 60 labourers totalling 2 200 man-months.

Transport Bureau
December 2001



drawing title 圖則名稱

工務計劃項目 745TH
屯門青龍路輕鐵交匯處 LT1 之分層交匯工程
PWP ITEM NO. 745TH
GRADE SEPARATION AT LIGHT RAIL TRANSIT JUNCTION LT1 AT TSING LUN ROAD, TUEN MUN

no. 次序	date 日期	description 內容摘要	initial 簽名
B	28.11.01	GENERAL REVISION	
A	26.11.01	GENERAL REVISION	SIGNED

修訂 REVISION

designed 設計	R.C.K.LAU	SIGNED	date 日期 5-11-01
drawn 繪圖	W.S.NG	SIGNED	date 日期 5-11-01
approved 核准	K.Y.LEUNG	SIGNED	date 日期 5-11-01

office 路政署（新界區）
HIGHWAYS / N.T. REGION

drawing no. 圖號 NHC30104-GL0001

scale 比例 1:2000 OR AS SHOWN

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港