For Information

Legislative Council Panel on Transport

777TH – Improvements to San Tin Interchange

PURPOSE

This paper informs Members of our proposal to upgrade **777TH** – Improvements to San Tin Interchange to Category A in order to carry out the proposed improvement works.

PROJECT SCOPE

2. The scope of **777TH** comprises –

(a) construction of a single two-lane road of 1.5 kilometres in length for the westbound traffic from Fanling Highway (FH) to the vehicle holding area (VHA) at Lok Ma Chau including 800 metres of elevated highway structures;

(b) construction of a single two-lane road of 850 metres in length for the eastbound traffic from San Tin Highway (STH) to the VHA at Lok Ma Chau including 450 metres of elevated highway structures;

(c) construction of a single two-lane road of 50 metres in length connecting Kwu Tung Road (KTR) to the road mentioned in paragraph 2(a) above;

(d) construction of a single two-lane road of about 250 metres in length between Castle Peak Road (CPR) and San Sham Road (SSR);

(e) modification of the junction of STH / CPR / Tun Yu Road (TYR) including signalisation of the junction of CPR and the slip roads from STH, and widening of a 300-metre section of CPR from a single two-lane to a dual two-lane road;

(f) construction of a single-lane road bridge of 70 metres in length across the San Tin Eastern Main Drainage Channel (STEMDC) connecting an existing unnamed road along the eastern side of STEMDC near the VHA to TYR;

(g) installation of noise barriers of 120 metres in length and 1.5 metres in height at STH near Wing Ping Tsuen;

(h) provision of a traffic control and surveillance system (TCSS); and

(i) associated works on junction improvements, landscaping, slopeworks, drainage, traffic management measures and street lighting.

A site plan showing the locations of the proposed works and the road sections concerned is at **Enclosure 1**.

JUSTIFICATION

3. The Lok Ma Chau (LMC) Boundary Crossing is the most heavily used boundary crossing[1], with about 70% of the cross boundary traffic being goods vehicles. Most of the cross-boundary vehicles use the strategic STH in the west and FH in the east which meet at the San Tin roundabout (the roundabout), and then travel through SSR, the only connecting road, to the LMC Boundary Crossing.

4. At present, the cross-boundary vehicles have to queue at the VHA that has 350 vehicle holding spaces for cross-border inspection. As a result of the limited capacity as well as the heavy utilisation of the Interchange and the roads in the vicinity, the cross-boundary traffic queue often tails back from the VHA to the roundabout, and consequentially spills over to STH and FH. In view of the increasing cross-boundary traffic, which is expected to grow at an average rate of 7% per annum in the coming years, we expect that the Interchange would suffer from capacity deficiency if no improvement were

[1] The number of vehicles using the boundary crossings from January to September 2004 was 38 321, of which 28 675, 7 428 and 2 218 used the Lok Ma Chau, Man Kam To and Sha Tau Kok Boundary Crossings respectively.

made to cope with the anticipated traffic growth. The Interchange would become a bottleneck along the cross-boundary corridor.

5. To meet the cross-boundary traffic demand and to relieve traffic congestion, we will construct a pair of elevated roads from STH and FH approaches of the Interchange as bypasses to the VHA. We will designate the roads for use by cross-boundary goods vehicles only so as to segregate these vehicles from the other vehicles using the Interchange. Upon completion of the improvement works, the projected design flow to capacity[2] (DFC) ratios of the roundabout during peak hours would be brought down from 0.89 to 0.5 and from 1.02 to 0.56 in 2007[3] and 2011 respectively.

6. We will also modify the layout of the junction of STH/CPR/TYR by realigning the existing slip roads between STH and CPR, signalising the junction of CPR and the realigned slip roads in order to improve the traffic flow capacity at this modified road junction, and widening a section of CPR from a single two-lane to a dual two-lane road. The capacity indices of this junction during peak hours in 2004, 2007 and 2011, with and without the proposed signalisation and widening of CPR, are/would be as follows –

Junction of CPR and slip roads from STH	**Capacity Index**	**Year**		
		2004	**2007**	**2011**
Without the signalisation and road widening	DFC	1.40	2.40	2.40
With the signalisation and road widening	RC[4]	–	28%	28%

7. We will construct two roads connecting KTR to FH westbound and CPR to SSR northbound. The former will divert the existing cross-boundary

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[2] DFC ratio is a design parameter that measures the degree of saturation of traffic at a priority junction. A DFC ratio above 1.0 indicates the presence of traffic queues. A DFC ratio of 0.85 is generally used in junction design where the situation permits.

[3] The DFC ratios have taken into account the cross-boundary traffic from the Hong Kong-Shenzhen Western Corridor / Deep Bay Link to be commissioned in 2006.

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

goods vehicles from KTR to use the new road mentioned in paragraph 2(a) above. The latter will divert the existing cross-boundary goods vehicles from CPR to SSR direct. We will also construct a road bridge across STEMDC to link TYR to the existing unnamed road to reprovide local access to and from CPR.

8. For monitoring and controlling traffic flows, we will install a TCSS comprising one closed circuit television camera with associated communication and installation equipment, and a traffic signal system at the LMC Boundary Crossing, and two full variable message signs at STH and SSR.

FINANCIAL IMPLICATIONS

9. We estimate the cost of this project to be $488.3 million in MOD prices, made up as follows –

		$ million
(a)	Road and drainage	131.6
(b)	Elevated highway structures	161.8
(c)	Road bridge	12.4
(d)	Slope works	47.9
(e)	TCSS and traffic management measures	14.0
(f)	Landscaping works	15.3
(g)	Noise barrier	1.5
(h)	Consultants' fees	69.6
	(i) construction supervision and contract administration	5.0

			$ million	
	(ii)	resident site staff costs	60.1	
	(iii)	environmental monitoring and audit (EM&A) programme[5]	4.0	
	(iv)	Electrical and Mechanical Services Trading Fund (EMSTF) charges[6]	0.5	
(i)	Contingencies		39.4	
		Sub-total	493.5	(in September 2004 prices)
(j)	Provision for price adjustment		(5.2)	
		Total	488.3	(in MOD prices)

10. Item (a) includes the road reconstruction, waterworks, pedestrian subway extension and road signage. Item (b) includes the detailed design and construction of the elevated highway structures. A breakdown of the estimates for item (g) on consultants' fees is at **Enclosure 2**.

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5 We will engage consultants to implement an EM&A programme at an estimated cost of $4.0 million to ensure timely and effective implementation of the recommended mitigation measures for the project.

6 Since the establishment on 1 August 1996 under the Trading Fund Ordinance, the EMSTF charges government departments for design and technical consultancy services for electrical and mechanical (E&M) installations provided by the Electrical and Mechanical Services Department. The services rendered for this project include checking consultants' submission on all E&M installations and providing technical advice to the Government on all E&M works and their impacts on the project from maintenance and general operation points of view.

11. The annual recurrent expenditure for the existing roads under the project is about $300,000. We estimate that the annual recurrent expenditure for those roads upon completion of the project will be $4.0 million.

PUBLIC CONSULTATION

12. We consulted the San Tin Rural Committee and the Traffic and Transport Committee of the Yuen Long District Council on 16 and 22 July 2003 respectively. Both Committees supported the project.

13. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 12 December 2003. We received 11 objections and all of them remained unresolved. Details of the unresolved objections[7] are as follows –

(a) six objectors objected to the resumption of land as a result of the implementation of the proposed works. They considered that their businesses would be affected adversely. Upon re-examination of the works area, we proposed to reduce the resumption area. The objectors agreed to withdraw their objections subject to the proposed modification;

(b) three objectors who were the land owner, tenant and sub-tenant of two lots, objected to the proposed resumption of the lots. The sub-tenant was concerned that the operation of his carparks on the lots would be affected adversely, whilst the land owner and tenant objected on the ground that the proposed resumption would adversely affect their income and would cause legal disputes among the objectors. We explained to them that the resumption was required for the proposed road works. To address their concerns, we proposed to provide temporary run-in for the carparks and allow the handing-over of the affected land by phases to minimise the impact on the operation of the carparks. Despite the

[7] Under the Ordinance, an objection that is withdrawn unconditionally is treated as if the objector has not lodged the objection. An objection which is not withdrawn or withdrawn with conditions is treated as an unresolved objection and will be submitted to the Chief Executive-in-Council for consideration.

proposed modification and site clearance arrangements, the objectors maintained their objections;

(c) one objector, whose land was let out for car parking and storage purposes, objected to the road works which necessitated the resumption of part of his land (about 36%). He considered that the remaining portion of his land would be too small for any practical open storage purpose. Therefore, the works would affect the opportunity to lease his land, thereby leading to financial loss. We advised him that the major part of the existing car park would remain unaffected and could continue to operate. He was also entitled to monetary compensation for the land resumed. However, the objector maintained his objection; and

(d) one objector requested the Government to realign the slip road connecting KTR to the westbound FH to avoid resumption of his lot. We explained that due to technical constraints, it was not feasible to relocate the slip road. The objector maintained his objection.

14. Having considered the unresolved objections and the proposed modifications, the Chief Executive-in-Council authorised the proposed works under the Ordinance on 2 November 2004 and the notice of authorization was gazetted on 19 November 2004.

ENVIRONMENTAL IMPLICATIONS

15. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an environmental permit is required for the construction and operation of the project. The key environmental concerns are traffic noise and tree felling. A statutory EIA was conducted in 2003 and the EIA report concluded that the environmental impacts of the project could be controlled to within the criteria under the EIA Ordinance and the Technical Memorandum on EIA Process. The Director of Environmental Protection approved the EIA report on 3 May 2004 and issued an environmental permit for the designated project on 15 June 2004.

16. In respect of traffic noise mitigation measures, we will provide transparent reflective plain barriers of 120 metres in length and 1.5 metres in height along the northbound STH to mitigate the traffic noise impact on Wing Ping Tsuen. The barriers will reduce noise level from about 71dB(A) to about 64.1dB(A).

17. The proposed road improvement works may involve removal of 339 trees including 230 trees to be felled and 109 trees to be transplanted elsewhere within the project site. All trees to be removed are not important trees[8]. To compensate for the loss of 230 trees, we will incorporate planting proposals as part of the project, including estimated quantities of 990 trees, 27 243 shrubs and 159 square metres of grassed area.

18. For short term impacts during construction, we will control noise, dust and site run-off nuisance to within established standards and guidelines through the implementation of appropriate mitigation measures in the works contract. We will also implement an EM&A programme to ensure timely and effective implementation of the recommended mitigation measures.

19. We will minimise the generation of construction and demolition (C&D) materials by reusing them as fill in the same project as far as possible. We estimate that the project will generate about 28 500 cubic metres of C&D materials. Of these, we will reuse about 11 000 cubic metres (38.6%) on site, 10 200 cubic metres (35.8%) as fills in public filling areas[9], and dispose of 7 300 cubic metres (25.6%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $912,500 for this project (based on a notional[10] unit cost of $125/cubic metre).

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[8] Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria −
(a) trees over 100 years old;
(b) trees of cultural, historical or memorable significance;
(c) trees of precious or rare species;
(d) trees of outstanding form; or
(e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).

[9] A public filling area is a designated part of a development project that accepts public fill for reclamation purpose. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering and Development.

[10] 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

20. We will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reuse and recycle C&D materials. We will require the contractor to ensure that the day-to-day operation on site will comply with the approved WMP. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes. To further minimise the generation of C&D materials, we will encourage the contractor to use non-timber formwork and recyclable materials for temporary works. We will control the disposal of the C&D materials to designated public filling facilities landfills through a trip ticket system. We will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities.

LAND ACQUISITION

21. We will resume about 6 300 square metres of private land for the proposed works. Land acquisition and clearance will affect 89 structures and three families. We will charge the land acquisition and clearance costs, estimated to be $12.7 million, to **Head 701** "Land Acquisition" **Subhead 1100CA** "Compensation and ex-gratia allowances in respect of projects in the Public Works Programme".

THE WAY FORWARD

22. We intend to submit the project to the Public Works Subcommittee and the Finance Committee of the Legislative Council on 15 December 2004 and 14 January 2005 respectively for upgrading the project to Category A. Subject to funding approval, we plan to start construction works in April 2005 for completion in March 2007.

ADVICE SOUGHT

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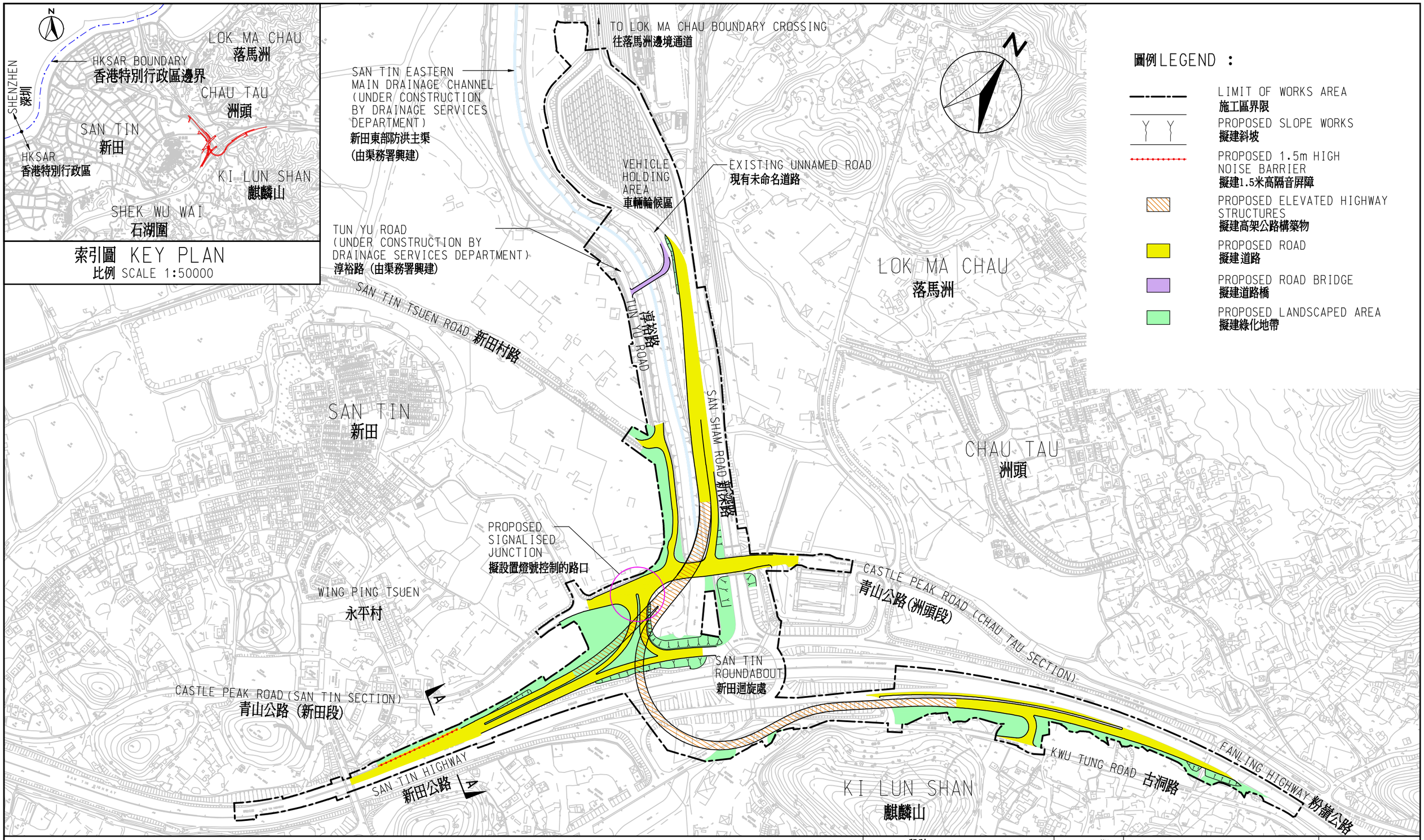
opportunity cost for existing landfill sites (which is estimated at $\$90/m^3$), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

23. Members are invited to note the contents of this paper.

Environment, Transport and Works Bureau
November 2004



drawing title 圖則名稱

PWP ITEM NO. 777TH - IMPROVEMENTS TO SAN TIN INTERCHANGE - SITE PLAN

工務計劃項目第777TH號 - 新田交匯處改善工程 - 工地位置圖

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drawing no. 圖號 PW01 A

scale 比例 A3 1:5000

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港

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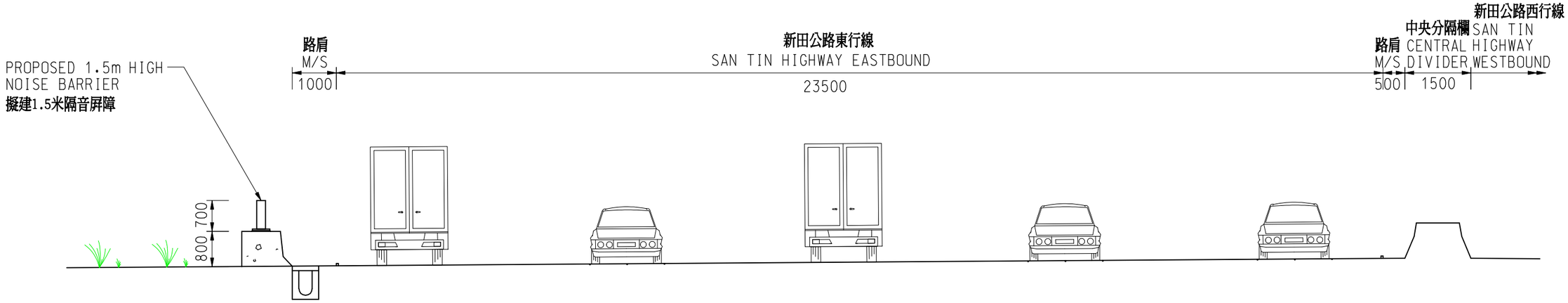
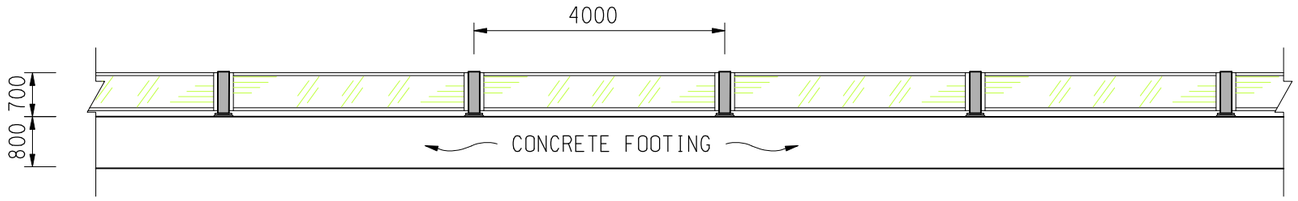
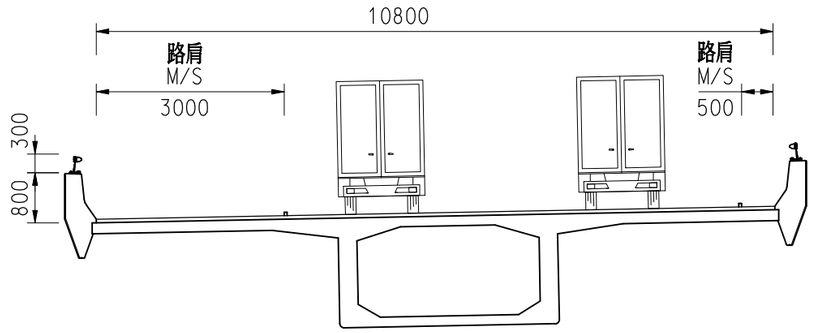


切面 SECTION A - A



立面圖 ELEVATION OF NOISE BARRIER



高架道路切面
TYPICAL SECTION OF
ELEVATED HIGHWAY STRUCTURES

NOTES: 圖解

1. ALL DIMENSIONS IN MILLIMETRES.
   所有尺寸爲毫米
2. M/S STANDS FOR MARGINAL STRIP.
   M/S 爲路肩縮寫

drawing title 圖則名稱

PWP ITEM NO. 777TH - IMPROVEMENTS TO SAN TIN INTERCHANGE - SECTIONS
工務計劃項目第777TH號 - 新田交匯處改善工程 - 切面圖

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scale 比例 A3 1:100

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港

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Enclosure 2

777TH – Improvements to San Tin Interchange

Breakdown of estimates for consultants' fees (in September 2004 prices)

Consultants' staff costs		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a) Construction supervision and contract administration (Note 2)	Professional	-	-	-	2.2
	Technical	-	-	-	2.8
(b) Resident site staff	Professional	228	38	1.6	20.4
	Technical	1 334	14	1.6	39.7
(c) EM&A programme	Professional	24	38	2.0	2.7
	Technical	36	14	2.0	1.3
				Sub-total	69.1
(d) EMSTF charges					0.5
				Total	69.6

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit as the staff will be employed in the consultants' offices. A multiplier of 1.6 is applied to the average MPS point in case of resident site staff supplied by the consultants. (At 1 January 2004, MPS pt. 38 = $55,993 per month and MPS pt. 14 = $18,603 per month).

2. The consultants' fees for construction supervision and contract administration are estimated in accordance with Agreement No. CE 18/2003 (HY) entitled "Improvements to San Tin Interchange − Design and Construction". The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **777TH** to Category A.