

Legislative Council Panel on Transport

Improvement to Traffic Conditions of Tuen Mun Road and Provision and Operation of Tunnels and Tollways

Purpose

This paper updates Members on the measures to improve the traffic conditions of Tuen Mun Road (TMR) and our efforts to enhance the traffic distribution between Tuen Mun Road and the Route 3, as well as that between the three road harbour crossings.

Improvement to Traffic Conditions of TMR

2. At the Panel meeting on 30 January 2004, we briefed Members on the traffic impact on TMR upon the commissioning of the Hong Kong – Shenzhen Western Corridor (HK-SWC) and Deep Bay Link (DBL) and the measures considered by the Administration to improve the traffic flow of TMR (LC Paper No. CB(1)848/03-04(03)). To recap, the TMR comprises two major sections – the Expressway Section (Wong Chu Road to Tsuen Wan Road) and the Town Centre Section (Wong Chu Interchange to Lam Tei Interchange). The design capacity of the Expressway Section is 118 000 vehicles. In 2003, the average daily traffic on the Expressway Section during weekdays was about 106 000 vehicles. The vehicle/capacity (v/c) ratio¹ is 1.1 during peak hours. As for the Town Centre Section, its design capacity is 78 000 vehicles. The v/c ratios of those busy sections, i.e. the southbound two-lane carriageways of the Tsing Tin Road Interchange section, the Town Plaza section and the Wong Chu Road Interchange section, during the morning peak period (7 a.m. – 9 a.m.) are 1, 0.9 and 1 respectively. During the off-peak and evening peak periods (5 p.m. – 7 p.m.), the v/c ratios of all sections in both directions are well below 1.

¹ A v/c ratio is normally used to reflect traffic situation during peak hours. A v/c ratio equal to or less than 1.0 means that the road has sufficient capacity to cope with the volume of vehicular traffic under consideration. A v/c ratio below 1 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.

3. Upon the commissioning of HK–SWC and DBL, the v/c ratio for the peak period at the most critical section of the Expressway Section (i.e. the Sham Tseng Section) is projected to increase from 1.1 in 2002 to about 1.19. As for the Town Centre Section, the traffic flow is projected to increase by 10% – 15%. The v/c ratios of the critical sections, i.e. the southbound carriageways of Tuen Mun Road at Tsing Tin Interchange and Wong Chu Interchange, would range from 1.04 to 1.18. To further improve the traffic flow of the area, we will implement improvements to the Town Centre Section of TMR (TMR - TCS), widen the section of Yuen Long Highways between Lam Tei and Shap Pat Heung Interchange, widen the Castle Peak Road, and put in place traffic management measures such as installation of variable message signs to enhance the traffic flow along TMR.

Improvements to the Town Centre Section of TMR

4. At the aforesaid Panel meeting, Members would like to have more information on the scope, timetable and traffic benefits of the improvement works to TMR - TCS. The information is set out below.

(1) Lengthening / Widening of Bus Bays alongside TCS of TMR

Scope

5. The works will lengthen the existing bus bay on TMR southbound near Tseng Choi Street and widen the existing bus bay on TMR northbound near Lee Fat Path to a standard width of 3 metres (Please refer to **Annex A**). Works are scheduled to commence in end 2004/early 2005 for completion in mid-2005.

Traffic Benefits

6. The existing bus bay near Tseng Choi Street can accommodate at most three buses each time while the bus bay near Lee Fat Path is of substandard width. Due to the limited capacities of these bus bays, buses very often have to queue up when loading/unloading passengers, thus blocking traffic along TMR – TCS. Lengthening and widening the bus bays will increase their capacities, which in turn will reduce obstruction to the main road traffic.

(2) Improvement of Merging Lane from Tuen Hi Road into TMR – TCS

Scope

7. The improvement works will lengthen the merging length and improve the road markings to facilitate a better traffic merging arrangement from Tuen Hi Road to TMR northbound. The proposed improvement works are shown in **Annex B**. Works are scheduled to commence in end 2004/early 2005 for completion in mid-2005.

Traffic Benefits

8. Tuen Hi Road is a service road parallel to TMR with a short merging lane to northbound TMR. As a result of the difficulties in merging into TMR, traffic queues often develop along Tuen Hi Road, especially during peak hours, and thus block vehicles from TMR entering this service road for loading/unloading activities. This blockage further leads to tailing back of vehicle to TMR – TCS, thus causing congestion. The proposed improvement works will improve both the local traffic and road safety conditions.

(3) Widening of TMR at Tsing Tin Road Interchange Section

Scope

9. The improvement works will widen TMR at Tsing Tin Road Interchange Section to a dual 3-lane carriageway (see **Annex C**). The feasibility study of the works is underway. The improvement works are scheduled to start tentatively in early 2007 for completion by the end of 2007.

Traffic Benefits

10. The existing TMR at the Tsing Tin Road Interchange Section is a dual 2-lane carriageway with a v/c ratio of about 1.04. This is one of the most critical sections in the TMR – TCS. It is forecast that after the commissioning of the HK-SWC and DBL, the v/c ratio at this section will increase to 1.18. After widening this section of TMR to a dual 3-lane carriageway, the v/c ratio at this section is expected to decrease to below 1.

(4) Modification of Directional Signs

Scope

11. We propose to modify the existing directional signs in the Tuen Mun district and to provide additional directional signs within the town centre to encourage motorists in the Tuen Mun New Town to use parallel routes in lieu of TMR – TCS for their journeys to Tsuen Wan and Kowloon. The modification works will be completed before 2006.

Traffic Benefits

12. Ming Kum Road, Tsing Wun Road and Wong Chu Road are parallel routes to the TMR – TCS. Diversion of traffic from TMR – TCS heading for Tsuen Wan and Kowloon to these parallel routes, which join TMR near Sam Shing Estate, will reduce the traffic loading at TMR – TCS.

Easterly Link Road (ELR)

13. During the discussion of the HK-SWC and DBL at the Public Works Sub-Committee meeting on 29 January 2003, we presented to Members our findings of the study on the possible alignments of the ELR, which may serve as an additional access road connecting the HK-SWC/DBL to the existing road system after landing at Ngau Hom Shek. Briefly, we have examined 13 possible alignments. Amongst them, six options, namely Options 1, 5, 6, 6A, 7 and 8, were shortlisted for further study (Please see **Annex D** for their alignments). Detailed analysis revealed that Option 6A would be the most preferred one having regard to engineering, land, planning, environmental and transport considerations. Members, however, considered Option 4 (alignment shown at **Annex D**) to be the most direct link from the DBL to Route 3.

14. We have conducted a further study on Option 4 which is a carriageway branching off from the DBL mainline at San Sang San Tsuen and cutting across the Hung Shui Kiu New Development Area (HSK NDA) to join the Yuen Long Highway through Tin Shui Wai West Interchange. Two possible schemes for this alignment option are identified in the further study, namely at-grade and grade-separated schemes. The alignments of both schemes are basically similar except that the grade-separated scheme is an elevated carriageway and is not connected to local roads (please see **Annexes E and F** for alignments). A comparison of different aspects of the two schemes is set out at **Annex G**.

15. While both the at-grade and grade-separated schemes for Option 4 are considered technically feasible, they will have extensive impacts on the planning of HSK NDA, the implications of which will have to be ascertained when the development programme and details of HSK NDA are confirmed. To avoid affecting the development potential of this area, it would be desirable to adopt an alignment which would have less impact and provide more flexibility in the land use and planning of the nearby areas. For this reason, Option 6A has advantages over Option 4 as it has relatively less impact on the future land use planning aspects. Moreover, we believe that the ELR per se will not help channel motorists from TMR. The effectiveness of the ELR in diverting vehicles to Route 3 hinges largely on the toll levels of Route 3, no matter which alignment scheme is to be adopted.

Discussions with Route 3

16. We have been encouraging the franchisee of Route 3 to offer more concessions to more classes of vehicles. The promotion packages launched by Route 3, including promotion offers for Autotoll motorists, concessions for empty trailers and articulated heavy goods vehicles during midnight hours and concessions for private light buses, have succeeded in boosting the patronage of and revenues from the vehicle types concerned.

17. Apart from toll reduction, we are also actively exploring with Route 3 the feasibility of some form of public-private-partnership in the construction of the Easterly Link Road. We hope to be able to come up with a proposal that would bring about a win-win situation for all – it would achieve the traffic management objective, meet the cost-effectiveness test for the public money spent and at the same time make commercial sense to the Route 3 franchisee.

Consultancy Study on the Provision and Operation of Tunnels and Tollways

18. We briefed Members at the Panel meeting in April 2003 on the findings of a consultancy study on the Mainland and overseas experience in the provision and operation of tunnels and tollways and its implications for Hong Kong. Given that there are greater similarities between the situation in Hong Kong and the Mainland, the focus of the study was more on Mainland experience. We have deposited the final report with the Panel Secretariat for members' reference.

19. Our observations regarding the different measures adopted by the Mainland cities are as follows –

Introduction of annual/monthly vehicle passage fees

20. The Mainland experience shows that the introduction of the annual/monthly vehicle passage fees has been generally effective in balancing the traffic flow among the tolled and untolled facilities. However, in some Mainland cities, the overall traffic flow increased after the elimination of tolls on tolled facilities and this had brought about a negative impact on the general traffic conditions. There is a further problem of fairness as this arrangement essentially requires less frequent users to subsidise the frequent users.

Resumption of operating rights by Mainland Authorities

21. Most of the agreements reached before 1998 between the investors of the tolled facilities and the Mainland authorities included a clause that guaranteed a minimum return on the investment. With the elimination of toll collection at the tolled facilities and the instruction of the State Council to clear agreements with guaranteed returns, the investors were compensated with a negotiated amount by the authorities as a buy-out of the tolled facilities. However, the information about the costs involved is not available, since the agreements were made between the Mainland authorities and private companies. As this option involves substantial capital payment from the public coffer, it will not be considered in the short to medium term.

Establishment of a Tunnels and Bridges Authority

22. This option is similar to the previous one as it also involves buying back the tunnels before establishing a central management authority to operate all tunnels and tollways. Regardless of whether the buy-back would take place in one-go or in phases, substantial capital and recurrent expenditure from the public coffer will be required. In view of the Government's current fiscal position, this option will not be considered either. On the operational front, the day-to-day management and operation of tolled tunnels and bridges in Hong Kong has already been contracted out to private management contractors. Hence, the establishment of a central management authority will only bring about limited efficiency gain.

Discussions with the Tunnel Companies

23. We have had discussions with the Western Harbour Tunnel Company Limited (WHTCL) about possible approaches to achieving a more balanced traffic distribution among the three road harbour crossings since 2001. We consider that any approach to be pursued must meet the following principles –

- (a) it should bring about overall benefit to the public;
- (b) it should protect the General Revenue;
- (c) it should make commercial sense to the franchisee;
- (d) it should help achieve the traffic management objective, i.e. a more balanced traffic distribution among the tunnels;
- (e) there should be a fair valuation of the road harbour crossings, especially the Cross Harbour Tunnel, as it is a valuable asset of the public;
- (f) it should be accompanied by a toll adjustment mechanism that is acceptable to the public, the Government and the tunnel operators; and
- (g) an institutional framework has to be worked out for the management of the three tunnels in a cost-effective and efficient manner.

24. Over the past three years, we have been discussing with the WHTCL possible options that may meet the above considerations. However, there are major differences in some of the fundamental parameters and assumptions held by the two sides. In fact, it is not easy to reconcile the different objectives and interests of different parties. Nonetheless, we maintain an open mind and have been trying to maintain a dialogue with the tunnel operator on possible measures to enhance the traffic distribution.

Other Traffic Management Measures

25. Separately, we have been examining traffic management improvement schemes to further enhance access to and utilisation of the Western Harbour Crossing (WHC). Since late 1999, WHC and the Transport Department have set up a Traffic and Transport Improvement Committee to jointly examine measures that could help improve the tunnel traffic.

26. In addition, we are reviewing measures to reduce congestion at busy traffic corridors taking into account the latest traffic developments and projections. We will adopt a holistic approach to enhance the traffic flow at different parts of the territory, and cross-harbour traffic is one of the areas that we will examine. We will consult the relevant parties and this Panel when we have come up with any proposed measures.

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

Environment, Transport and Works Bureau
27 May 2004



近井財街的巴士灣
延長工程
LENGTHENING OF BUS BAY
NEAR TSENG CHOI STREET

近利發徑的巴士灣
延長及擴闊工程
LENGTHENING & WIDENING OF
BUS BAY NEAR LEE FAT PATH

建議的屯門公路巴士灣改善工程

PROPOSED IMPROVEMENT WORKS TO BUS BAYS AT TUEN MUN ROAD



杯渡路 PUI TO ROAD

青山公路 - 青山灣段
CASTLE PEAK ROAD - CASTLE PEAK BAY

由屯喜路至屯門公路的
合流行車綫改善工程
IMPROVEMENT TO MERGING
LANE FROM TUEN HI ROAD
TO TUEN MUN ROAD

屯門公路
屯喜路
TUEN MUN ROAD
TUEN HI ROAD

屯興路
TUEN HING ROAD

建議於屯喜路與屯門公路交界處的道路改善計劃
PROPOSED IMPROVEMENT WORKS AT
JUNCTION OF TUEN HI ROAD AND TUEN MUN ROAD



W/P Sep 2002

行車道擴闊工程
WIDENING OF CARRIAGEWAY

青田交匯處
TSING-TIN
INTERCHANGE

屯門河道
Tuen Mun River Channel

排水口
outfall

屯門公路
TUEN MUN ROAD

屯門公路
TUEN MUN ROAD

青田公路 - 新路段
CASTLE PEAK ROAD - SAN HO

青田公路 - 舊路段
CASTLE PEAK ROAD - SAN HO

蘭地花園
Fung Tei Garden

青田兒童遊樂場
Tsing Tin Children's Playground

青田街市
菜園花園
Keung Chai Market
Rooftop Garden

好勝大廈
Victory Building

金寶大廈
Kim Ba Building

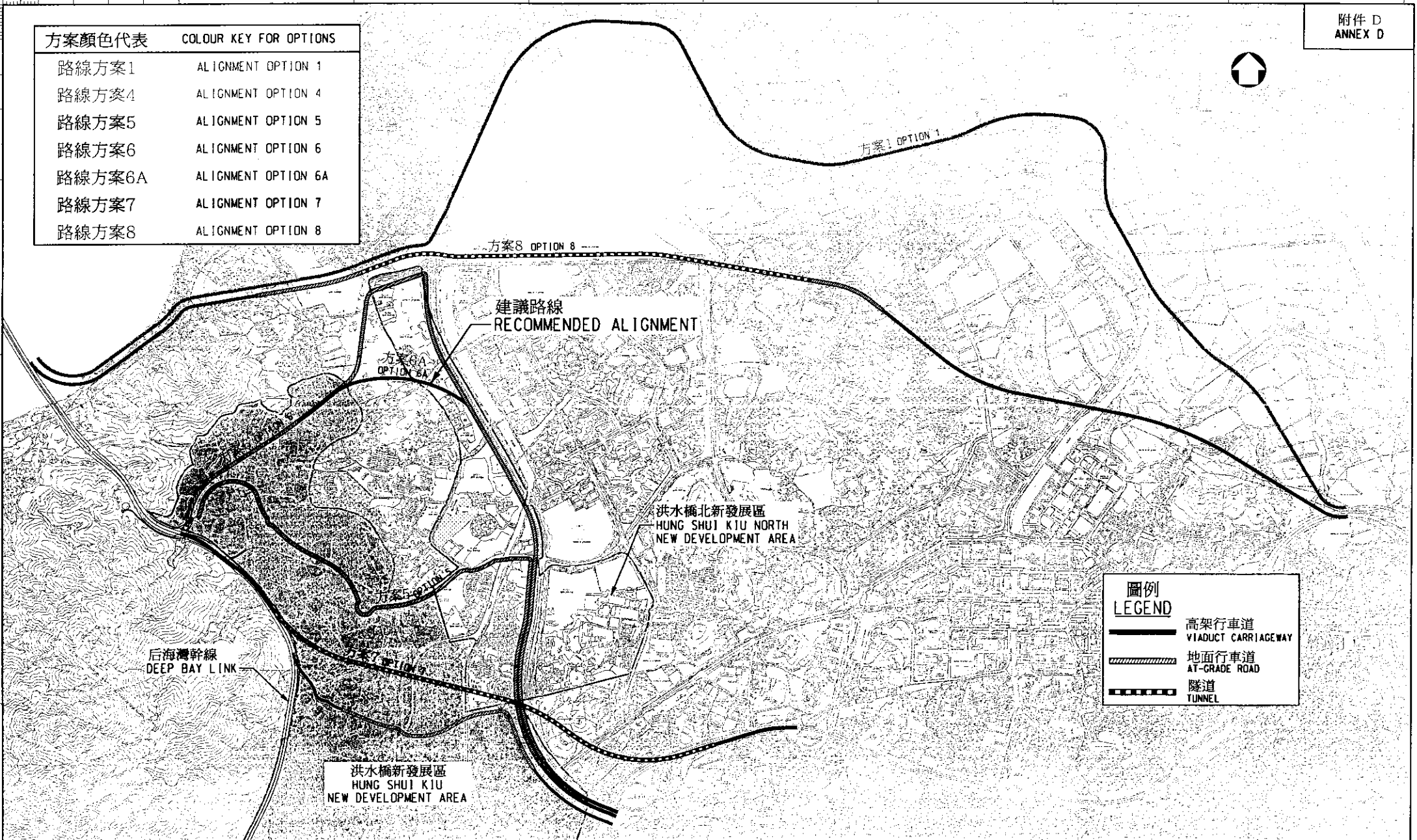
力生大廈
Lakeshore Building

好發大廈
Rich Building

建議於青田交匯處的屯門公路擴闊工程

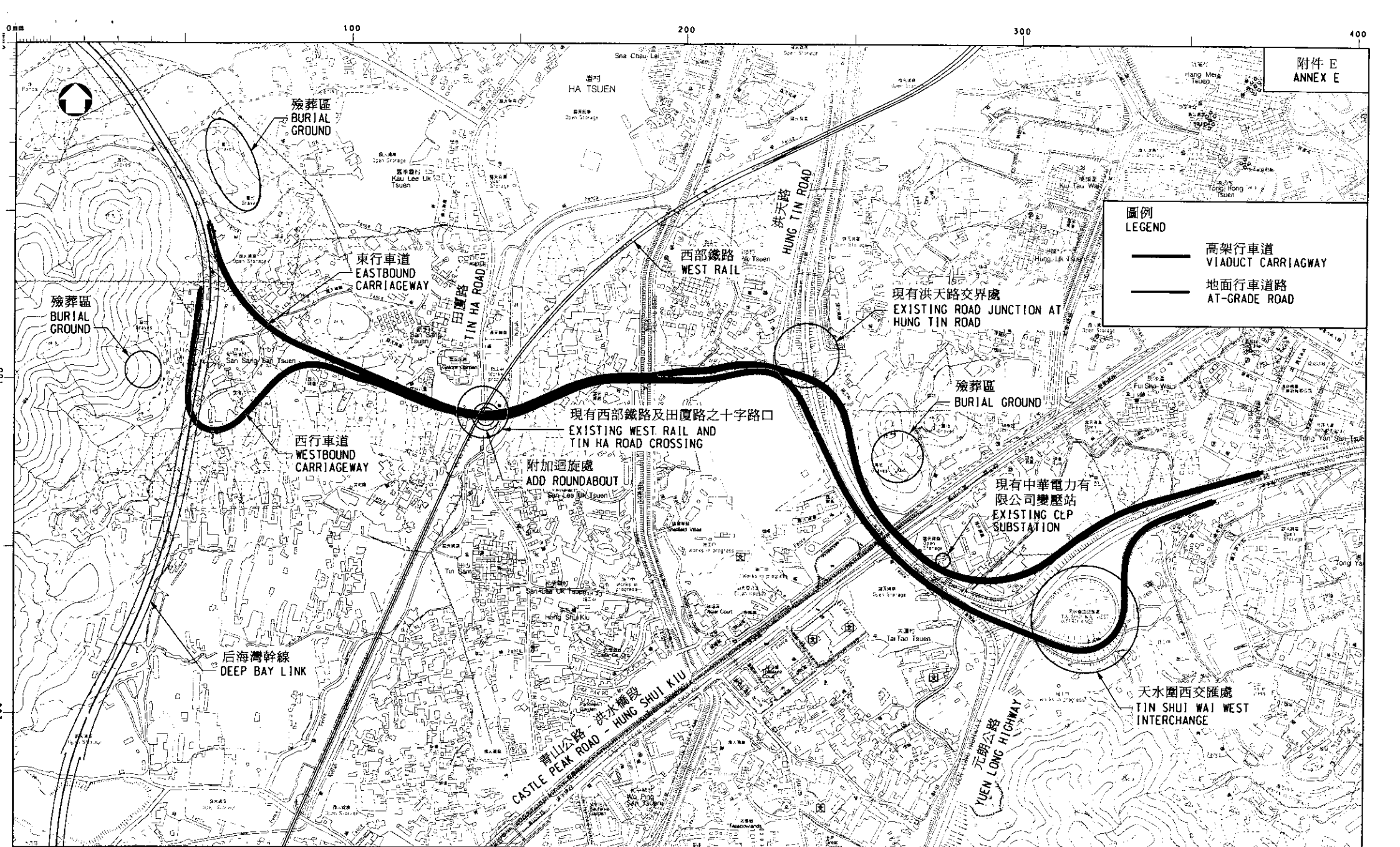
PROPOSED ROAD WIDENING OF TUEN MUN ROAD AT TSING TIN INTERCHANGE

方案顏色代表	COLOUR KEY FOR OPTIONS
路線方案1	ALIGNMENT OPTION 1
路線方案4	ALIGNMENT OPTION 4
路線方案5	ALIGNMENT OPTION 5
路線方案6	ALIGNMENT OPTION 6
路線方案6A	ALIGNMENT OPTION 6A
路線方案7	ALIGNMENT OPTION 7
路線方案8	ALIGNMENT OPTION 8



圖例 LEGEND	
	高架行車道 VIADUCT CARRIAGEWAY
	地面行車道 AT-GRADE ROAD
	隧道 TUNNEL

圖則名稱 drawing title		設計 designed	SIGNED	繪圖 drawn	SIGNED	圖則編號 drawing no.	比例 scale
東行連接路 EASTERLY LINK ROAD		C.F.KU	24/05/04	M.K.LEUNG	25/05/04	HMWP021TH-SP0005	1:20 000
甄選後餘下的方案 1, 5, 6, 6A, 7 & 8 及方案 4 SHORTLISTED OPTIONS 1, 5, 6, 6A, 7 & 8 AND OPTION 4		覆核 checked	SIGNED	批准 approved	SIGNED	© 版權所有 COPYRIGHT RESERVED	
		C.F.KU	25/05/04	W.C.LAU	25/05/04	HONG KONG 路政署	
		主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE					



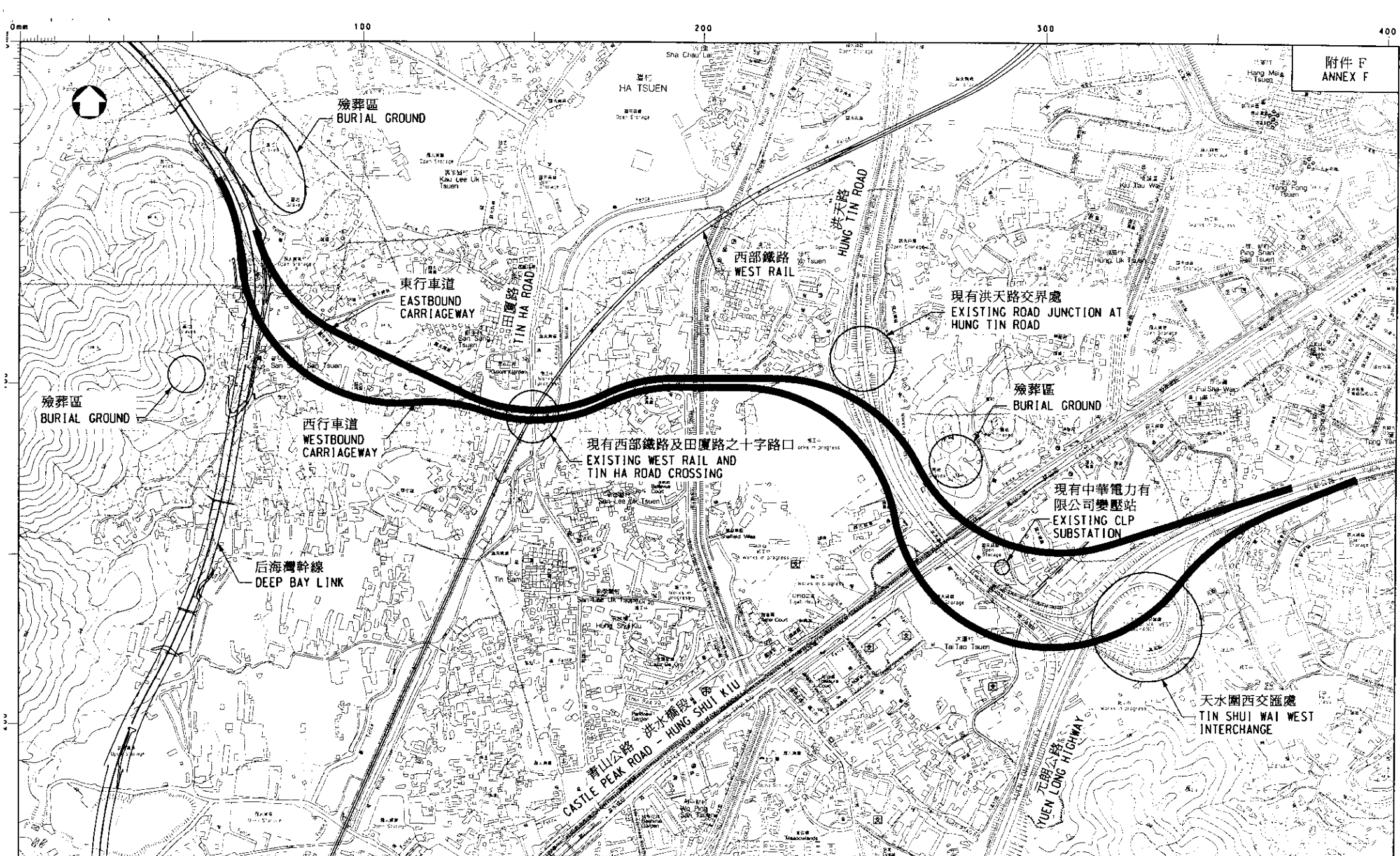
圖例
LEGEND

- 高架行車道
VIADUCT CARRIAGWAY
- 地面行車道路
AT-GRADE ROAD

圖則名稱 drawing title

洪水橋地面行車道路方案路線
AT-GRADE HUNG SHUI KIU SCHEME ALIGNMENT

設計 designed	SIGNED	繪圖 drawn	SIGNED	圖則編號 drawing no.	比例 scale
C.F.KU	24/05/04	L.B.LEUNG	25/05/04	HMWP021TH-SP0006	1:7 500
覆核 checked	SIGNED	批准 approved	SIGNED	© 版權所有 COPYRIGHT RESERVED	
C.F.KU	25/05/04	W.C.LAU	25/05/04	HIGHWAYS 路 DEPARTMENT 政 HONG KONG 署	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE					



附件 F
ANNEX F

圖則名稱 drawing title

洪水橋立體交叉行車道方案路線
GRADE SEPARATED HUNG SHUI KIU SCHEME ALIGNMENT

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.F.KU	24/05/04	M.K.LAW	24/05/04
覆核 checked	SIGNED	批准 approved	SIGNED
C.F.KU	25/05/04	W.C.LAU	25/05/04

圖則編號 drawing no.	比例 scale
HMWP021TH-SP0007	1:7 500
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主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE



**Comparison of the At-grade and Grade-separated Schemes
for Alignment Option 4 of ELR**

Design speed

As an elevated carriageway, the grade-separated scheme can operate at 80 km per hour. The at-grade scheme will have junctions with the existing roads and also the planned roads for HSK NDA, thus it will only be possible for the at-grade scheme to operate at 50 km per hour.

Alignment

2. The at-grade scheme follows the road alignment proposed in the HSK NDA, thus will have little impact to the road layout proposed for HSK NDA. However, the grade-separated scheme would need to span over the DBL, the West Rail and also Hung Tin Road. In order to satisfy the vertical curvature requirements, a high level viaduct is required which will create significant visual impact on the area nearby.

Interference with the West Rail

3. The grade-separated scheme will have direct interference with the West Rail as its alignment will pass over the operating railway. The at-grade scheme passes under the West Rail viaducts near the existing Ping Ha Road and will have less interference with the operating railway.

Traffic Implications

4. It is estimated that as compared with the scenario without ELR, the saving in journey time for the at-grade scheme is about 2 minutes while that for the grade-separated scheme is about 4 minutes. With a higher operating speed and more saving in journey time, the grade-separated scheme is likely to be more attractive to the through traffic from HK-SWC to New Territories East and Route 3. However, the local residents would probably prefer the at-grade scheme to which they have direct access.

Land implications

5. Both schemes will affect existing burial grounds. The grade-separated scheme will probably affect more graves at the burial grounds east of Hung Tin Road due to its horizontal curvature requirements which push the alignment nearer to the burial grounds. This scheme will also require more land clearance on both sides of the viaduct.

Environmental implications

6. The at-grade scheme will have a greater noise impact while the grade-separated scheme will have a greater visual impact since the latter is in the form of high level viaducts running across Hung Shui Kiu.

Cost

7. As the grade-separated scheme is all on viaducts, it will be more costly than the at-grade scheme. The grade-separated scheme is estimated to cost \$800 million (at September 2003 prices) with an estimated land resumption cost of about \$232 million. The at-grade scheme is estimated to cost \$440 million (at September 2003 prices) with land resumption cost of about \$182 million.

Work Programme

8. The grade-separated scheme will require 24 months to construct while the at-grade scheme will take about 20 months as less viaduct structures are involved. However, the programmes do not include time required for the design and necessary statutory procedures, such as gazetting under the Roads (Works, Use and Compensation) Ordinance and application for permit(s) under the Environmental Impact Assessment Ordinance, which will take a further two and a half years to complete.