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Panel on Transport

**Background brief on
Northwest New Territories Traffic and Infrastructure Development**

Purpose

This paper provides some background information on the Government's planning for transport infrastructure development in Northwest New Territories (NWNT).

2. To meet the anticipated growth in cross-boundary traffic, new road crossings have been planned in coordination with the Mainland authorities, including the Hong Kong-Shenzhen Western Corridor (HK-SWC), which is targeted for completion in 2005/2006, and the planned Hong Kong-Zhuhai-Macao Bridge (HZMB), which links between the Hong Kong Special Administrative Region (HKSAR) and the west bank of the Pearl River Delta.

Hong Kong-Shenzhen Western Corridor

3. The Panel recognizes the need for constructing the HK-SWC, which is a dual three-lane carriageway spanning across Deep Bay, linking the northwestern part of the New Territories with Shekou in Shenzhen. When consulted on the HK-SWC and its connecting road, the Deep Bay Link (DBL) in October 2001, the Panel raised concerns that the SWC and DBL traffic, upon opening, would cause unacceptable congestion at Tuen Mun town centre and Tuen Mun Road. Some members considered that the planning of the supporting infrastructure, especially Route 10 - North Lantau to Yuen Long Highway (Route 10 Northern Section), should be co-ordinated with the HK-SWC and DBL programme. At the same time, the Panel had received views from various bodies and members of the public regarding the proposed implementation of Route 10. Five public hearings on the HK-SWC, DBL and Route 10 were held between November 2001 and January 2002.

4. At the Panel meetings, Route 3 (CPS) Company indicated that there was still spare capacity at Route 3 and the route would not reach saturation until 2016. Route 10 Northern Section would not be required until then.

5. According to the Administration's forecasts, Route 3 would be saturated by 2010-11 during peak hours and Route 10 Northern Section would be required by then. However, in view of the concerns raised by members, the Tuen Mun District Council and the Yuen Long District Council, the Administration would be prepared to start the detailed design of Route 10 Northern Section in 2002 to retain the flexibility of completing the project between 2007-08 and 2010-11.

6. As regards the suggestion that Route 10 be replaced with a link road between Tuen Mun and Chek Lap Kok, the Administration explained that such a route was already on its drawing board but its priority was lower than that of Route 10. That was because it related to future traffic demand arising from the further development on Lantau Island. This link could not perform the important functions of Route 10, such as providing a connection between NWNT and the urban areas and container ports, and relieving Tuen Mun Road and Route 3 in the longer term.

7. In March 2002, the Finance Committee approved the funding proposal for the detailed design of the HK-SWC and DBL projects, but not the Route 10 Northern Section project. The Finance Committee's approval in respect of the HK-SWC and DBL projects was made on the requirement that the Administration would investigate and design an Easterly Link Road (ELR) as requested by some members. The ELR would serve as an additional access road connecting the HK-SWC and DBL to the existing road system to facilitate traffic heading east from DBL after landing at Ngau Hom Shek.

8. In December 2002, the Administration consulted the Panel again on the HK-SWC and DBL projects prior to seeking funding approval for their construction. The funding proposal for the construction of the HK-SWC and DBL was approved by the Finance Committee on 21 February 2003.

Hong Kong-Zhuhai-Macao Bridge

9. Apart from the HK-SWC, the Administration is also planning for another cross boundary link, the HZMB. An Advance Work Co-ordination Group (AWCG) has been set up by the respective provincial and Special Administrative Region governments to take forward preparatory work for the HZMB. The AWCG has commissioned the China Highway Planning and Design Institute (HPDI) to conduct a feasibility study on the Bridge which consists of more than twenty topical studies. The HPDI has evaluated 10 alignment options for the Bridge and has recommended four of them for the consideration of AWCG. On Hong Kong's side, the Bridge will land on Northwest Lantau near the San Shek Wan Headland. For the western bank of the Pearl River Delta, the landing points recommended are at Gongbei/A Perola or Hengqin. The study results will be further considered by the three governments. The Administration will proceed to the next stage of work after the official establishment of the project by the State Council.

10. On another front, with the funding approved by the Finance Committee of the Legislative Council in December 2003, the Administration had commenced an Investigation and Preliminary Design study for the section of the Bridge within Hong Kong and the connecting infrastructure linking the Bridge with the local transport network. The study will be completed by early 2005. The Administration proposes to brief members on the latest progress of the advance work for the HZMB in the second quarter of 2005.

Northwest New Territories Traffic and Infrastructure Review

11. In August 2003, the Panel was briefed on the preliminary outcome of the Northwest New Territories Traffic and Infrastructure Review (the Review). The purpose of the Review is to develop a long-term strategy for the development of highway infrastructure in the NWNT and North Lantau region (the Strategy). In formulating the Strategy, a Highway Network Development Plan (the Plan) was developed which combined the existing highway network with possible future extensions. The Administration has advised that it would formulate a development sequence of new highway infrastructure projects identified in the Plan and their implementation timeframe, taking into account the planning parameters (such as population, economic growth, new developments in Lantau and cross boundary traffic) so that the projects could be implemented in a timely manner to meet forecast demands.

12. The Review had identified that arising from different scenarios of economic and tourism development and highway expansion, the pressure on future highway network would mainly be in the following areas:

- (a) new demands in the NWNT arising from the HK-SWC;
- (b) new demands on Lantau arising from the HZMB;
- (c) need to relieve Tuen Mun Road; and
- (d) need to provide a second connector to link Lantau with the NWNT and the urban areas.

13. The magnitude of the forecast demands in these identified areas were affected by economic and population developments in Hong Kong and the Pearl River Delta Region. The forecast demands would have to be continuously reviewed to take account of new circumstances and planning assumptions. However, demands in different areas were inter-related and were dependent on the implementation timeframe of new key transport infrastructure projects, such as the HZMB.

The Highway Development Packages

14. Four proposed packages of highway projects were identified to meet the future demands on highway infrastructure:

Package A - The Lantau-Urban Link comprising:

- (A1) a tunnel link connecting the HZMB and the North Lantau Highway;
- (A2) Lantau Road P1 between Tung Chung and Yam O so as to provide additional capacity to the North Lantau Highway;
- (A3) a Tsing Yi-Lantau Link (TY-LL) to cater for traffic demand between Lantau and the urban areas so as to relieve pressure on Lantau Link. Subject to engineering feasibility, the TY-LL may join with Route 9 to form a connection to the northeast New Territories; and
- (A4) the Pa Tau Kwu section of the Chok Ko Wan Link Road (CKWLR) to connect the Penny's Bay section of CKWLR with the proposed TY-LL.

Package B - Tuen Mun Road Bypass comprising:

- (B1) a So Kwun Wat Link Road; and
- (B2) Sham Tseng Tunnel Link Road.

Package C - Strategic North-South Link (East) comprising:

- (C1) the Lam Tei Tunnel between DBL at Lam Tei and So Kwun Wat Interchange near Tai Lam;
- (C2) So Kwun Wat Interchange;
- (C3) the Tai Lam Chung Tunnel between Tai Lam and Tsing Lung Tau;
- (C4) the Tsing Lung Bridge and Interchanges at Tuen Mun Road and North Lantau Highway; and
- (C5) a "Coastal Road" from Ting Lung Bridge and an interchange with the TY-LL.

Package D - Strategic North-South Link (West) comprising:

- (D1) the Tuen Mun Western Bypass from DBL at Hung Shui Kiu to south Tuen Mun near Butterfly Beach; connecting with

(D2) the Tuen Mun to Chek Lap Kok Link.

15. A plan showing the proposed packages is at **Annex 1**.

16. In June 2004, the Panel revisited the item on NWNT Traffic and Infrastructure Review. The Administration has pointed out that a proposed implementation programme for the necessary infrastructure could only be drawn up when a clearer picture on the traffic demand arising from HZMB and the development programme for other major proposals on Lantau were available. The Administration will brief members on the outcome of the NWNT Traffic and Infrastructure Review 2004 at the forthcoming meeting to be held on 18 March 2005.

Traffic impact on Tuen Mun Road

17. The traffic impact on Tuen Mun Road upon the commissioning of the HK-SWC and DBL has all along been one of the major concerns of the Panel. The Panel has cast doubt on the basis of the assessment that the existing highway network in the NWNT has adequate capacity to cope with the traffic demand arising from the commissioning of the HK-SWC and the DBL, and explored improvement measures to transport networks in Tuen Mun and Yuen Long to cope with the traffic flow.

18. Tuen Mun Road 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).

19. 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.

20. According to the information provided by the Administration in May 2004, 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,

¹ 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. Above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increase in traffic and such v/c ratios are considered unacceptable.

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.

21. In anticipation of an increase in traffic flow on Tuen Mun Road upon the commissioning of the HK-SWC and DBL, the Administration has advised that it would introduce a number of improvement works to improve the traffic situation. These include the improvements to the Town Centre Section and the reconstruction of the Expressway Section. The long-term needs for transport infrastructure development in NWNT and Lantau would be addressed under the NWNT Traffic and Infrastructure Review.

22. On 11 June 2004, the Finance Committee approved the Administration's funding proposal for the detailed design for the reconstruction and improvement of the section of Tuen Mun Road between Tsuen Wan and Sam Shing Hui and to carry out the associated site investigation works. The Administration was requested to explore the feasibility of widening Tuen Mun Road to dual four-lane standard in view of the heavy traffic on Tuen Mun Road. The Administration will brief members on the improvements to Tuen Mun Road at the forthcoming meeting to be held on 18 March 2005.

Diversion of traffic from Tuen Mun Road to Route 3

23. In order to achieve a more balanced traffic distribution between Route 3 and Tuen Mun Road so as to relieve the traffic burden on the latter, the Panel has reviewed with the Administration and Route 3 (CPS) Company on means to achieve the said objective.

24. Route 3 (Country Park Section) was opened in 1998. It is a dual three-lane north-south expressway connecting Ting Kau and Au Tau. It serves as an alternative to Tuen Mun Road and Tolo Highway. It has a design capacity of 118 000 vehicles per day. The Route 3 (Country Park Section) Company Limited was granted in 1995 a 30-year franchise to build and operate Route 3. The franchise would expire in 2025.

25. In 2003, the average daily traffic throughput of Route 3 on weekdays was about 46 000 vehicles. The v/c ratio during peak hours was around 0.7 in 2003. According to an information paper provided by the Administration for the Panel meeting in January 2004, upon the commissioning of the HK-SWC and DBL, the v/c ratio for Route 3 during peak hours would rise from 0.7 in 2003 to 0.9.

26. The Administration has advised that it has examined different measures to divert more traffic from Tuen Mun Road to Route 3 so as to further improve the traffic distribution between the two routes. These include:

- (a) Widening of Yuen Long Highway (between Lam Tei and Shap Pat Heung

Interchange) by late 2005;

- (b) On-going discussion with the company on the possibility of reducing tolls or offering more concessions to more classes of vehicles;
- (c) Implementation of traffic management measures to help improve the traffic flow at Tuen Mun Road such as the installation of variable message signs to inform motorists of the prevailing traffic conditions of the various strategic routes;
- (d) Buying out the ownership of Route 3 with a view to lowering the toll levels of Route 3 to improve the traffic distribution between Route 3 and Tuen Mun Road (The Administration's view in January 2004 was that given the Government's current financial position, this option would not be considered in the short to medium term);
- (e) Provision of subsidies to encourage motorists to use Route 3 rather than Tuen Mun Road (The Administration's view in January 2004 was that as the proposal involved huge recurrent expenditure from the public coffer and other technical difficulties, it did not intend to pursue this option); and
- (f) Construction of an ELR to serve as a possible additional access road connecting the HK-SWC and DBL to the existing road system to facilitate traffic heading east from the DBL.

Easterly Link Road

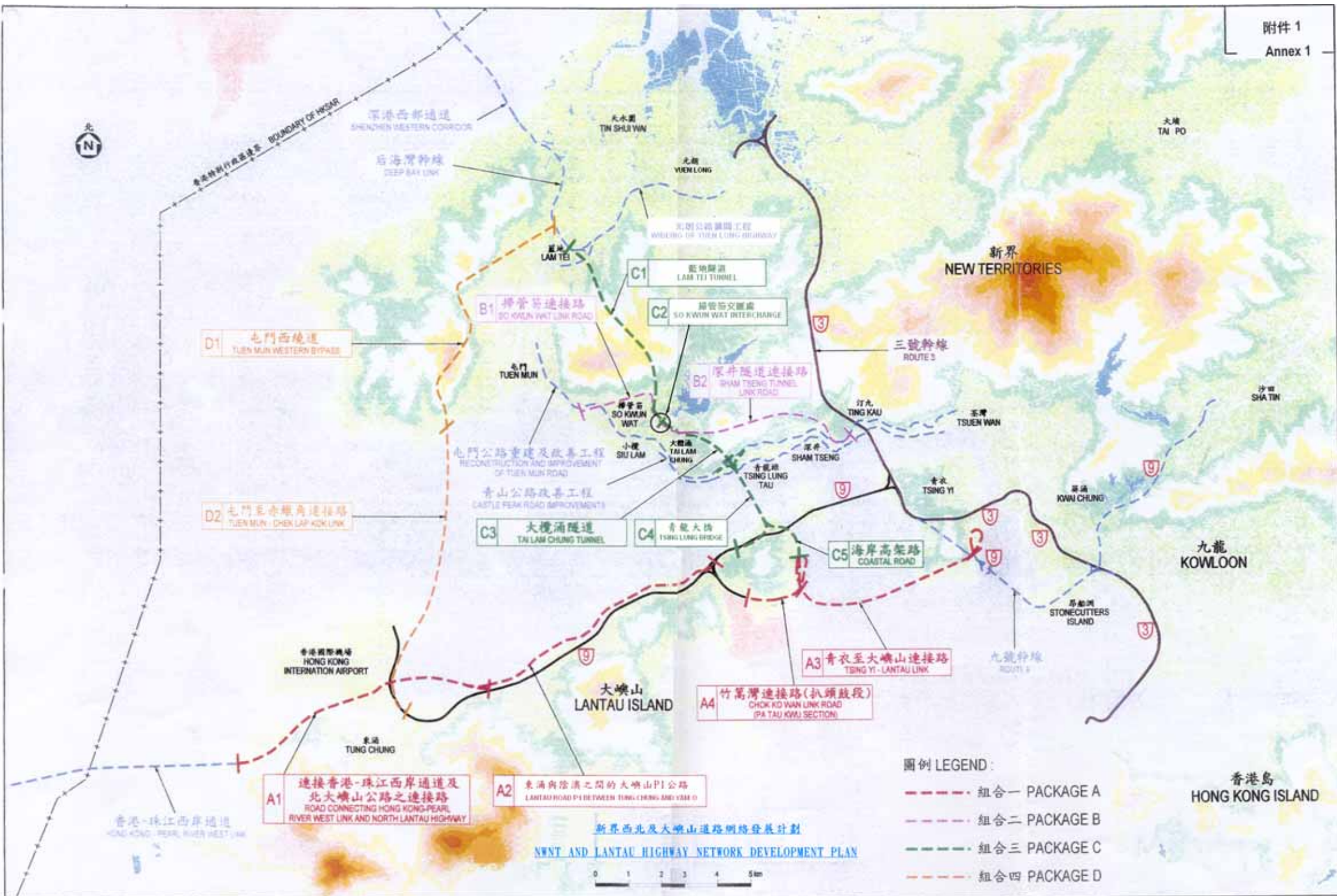
27. During the discussion of the HK-SWC and DBL at the Public Works Sub-Committee meeting on 29 January 2003, the Administration presented to members its findings of the study on the possible alignments of the ELR, which may serve as an additional access road connecting the HK-SWC/DBL to the existing road system after landing at Ngau Hom Shek. Briefly, the Administration has 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 2** 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 and Route 3 (CPS) Company, however, considered Option 4 (alignment shown at **Annex 2**) to be the most direct link from the DBL to Route 3.

28. The Administration has 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.

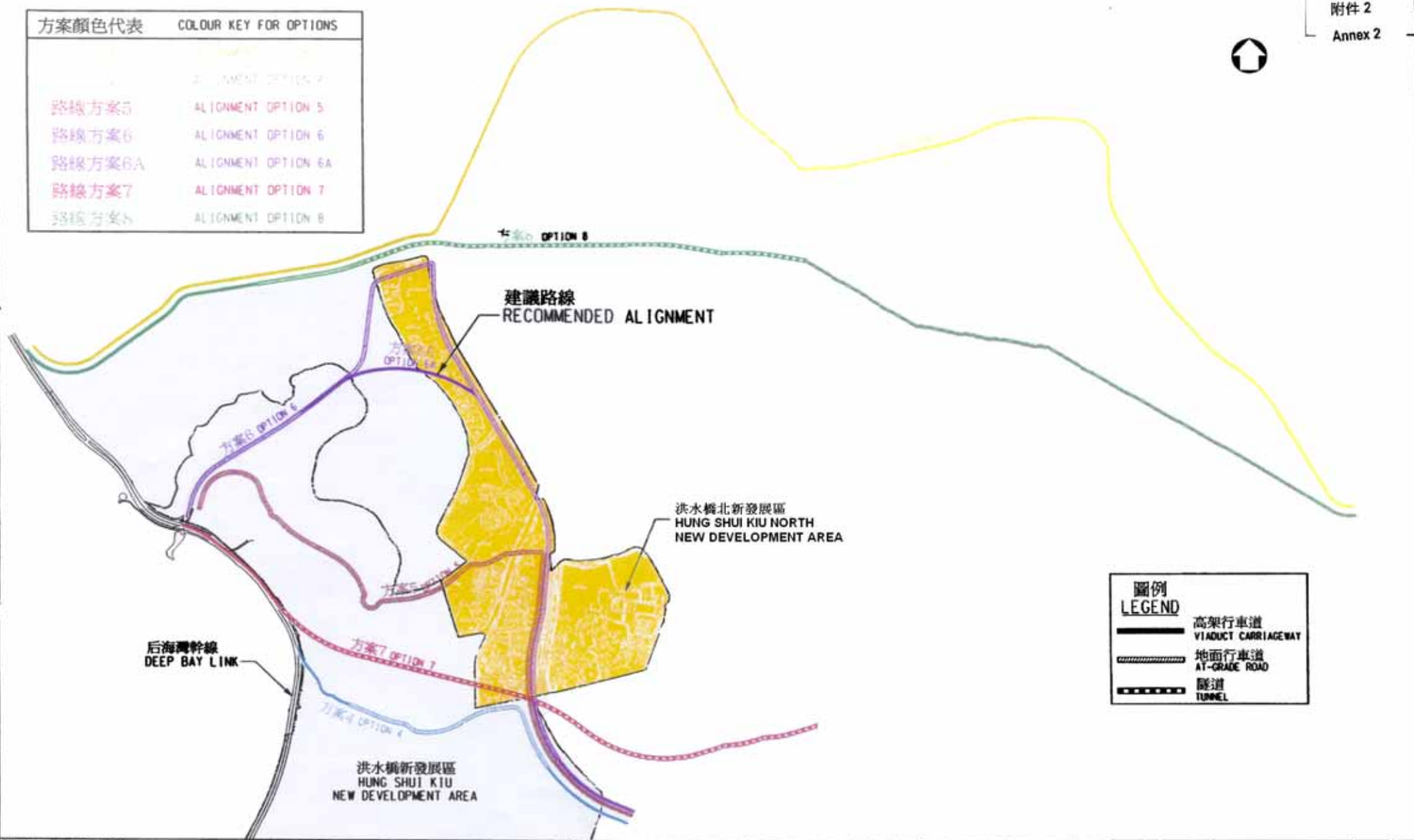
29. While both the at-grade and grade-separated schemes for Option 4 are considered technically feasible, they will have extensive impacts on the planning of HSK NDA, the implications of which will have to be ascertained when the development programme and details of HSK NDA are confirmed. To avoid affecting 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, the Administration's view is that the ELR per se will not help channel motorists from Tuen Mun Road. 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.

30. The Administration has encouraged the franchisee of Route 3 to offer more concessions to more classes of vehicles. Apart from toll reduction, the Administration has also explored with Route 3 the feasibility of some form of public-private-partnership in the construction of the Easterly Link Road. The Administration hopes 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.

Council Business Division 1
Legislative Council Secretariat
14 March 2005



方案顏色代表	COLOUR KEY FOR OPTIONS
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

**東行連接路
EASTERLY LINK ROAD**

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

設計 designed	SIGNED	繪圖 drawn	SIGNED	圖則編號 drawing no.	比例 scale
C.F.KU	24/05/04	M.K.LEUNG	25/05/04	HMWP021TH-SP0005	1:20 000
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 DEPARTMENT 路政署 HONG KONG 香港	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE					

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