

An aerial, high-contrast black and white photograph of a city. A prominent feature is a large, multi-lane circular interchange or roundabout in the center-right. A wide river or canal flows from the top left towards the bottom center. The surrounding urban area is densely packed with buildings and streets. The overall image has a grainy, high-contrast aesthetic.

COMPARATIVE ANALYSIS OF ADVERTISING IN THE MVA VS OPTIMUM MVA VS OPTIMUM

LD Asia

In association with
Black & Veatch HK Ltd.
MVA HK Ltd.

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Comparative Study for Easterly Link: Option 4 vs. Option 6A

Executive Summary

A. THE NEED FOR EASTERLY LINK

To cater for the rapid growth of cross-boundary traffic between HKSAR and Shenzhen, a new cross-boundary highway link, namely the Shenzhen Western Corridor (SWC) is currently under construction. This dual 3-lane highway link will connect Shekou to the Northwest New Territories. On the Shenzhen side the SWC will connect to the Guang-Shen Superhighway, whilst on the Hong Kong side the Deep Bay Link (DBL) will provide the connection to the strategic highway network in Northwest New Territories (**Figure A**). Both the SWC and the DBL are scheduled for completion by December 2005.

It is currently proposed that the Deep Bay Link should connect to the existing Yuen Long Highway at the new Lam Tei Interchange. The problem with this is that the previously planned Route 10 highway, which would carry the cross-boundary traffic into the heart of the SAR, has now been postponed to not earlier than 2011. Hence, the cross-boundary traffic is likely to seriously overload the already congested section of Tuen Mun Road between Tuen Mun and Tsuen Wan.

To resolve this, it is required to divert these traffic from Tuen Mun Road to the currently under-utilised Route 3 through the creation of an Easterly Link, i.e. new connection between the Deep Bay Link and Yuen Long Highway.

Apart from relieving traffic loadings on the already congested section of Tuen Mun Road between Tuen Mun and Tsuen Wan, the Easterly Link would produce a more even distribution of traffic across the NWNT strategic highway network and facilitate better utilisation of the currently under-utilised Route 3 highway.

B. OPTIONS FOR EASTERLY LINK: OPTIONS 4 AND 6A

A total of 13 options for the Easterly Link are proposed and considered by Highways Department (see **Figure B**). It is currently known that the last two preferred options are Options 4 and 6A (see **Figure C**).

Option 4 (Alignment following Road D6 and connecting to Hung Tin Road)

Alignment Option 4 connects with the Deep Bay Link's Northern Section at the west side of Hung Shui Kiu (HSK) with Slip Roads A and B. The alignment then routes across Hung Shui Kiu and connects with the existing Hung Tin Road flyover with two other dedicated Slip Roads C and D immediately before crossing Castle Peak Road which further connects to the Yuen Long Highway at Tin Shui Wai West Interchange.

From Deep Bay Link, the road will be connected via two dedicated Slip Roads A and B serving respectively the southbound and northbound traffic. Each of the two slip roads will accommodate a 7.3m wide single 2-lane with 1.0m marginal strip at both sides.

The slip road will merge into a dual 2-lane carriageway at the main line section. Taken into consideration the green concepts of the future Hung Shui Kiu Strategic Growth Area (SGA), it is considered that the main line section of the Easterly Link Alignment Option 4, overlap with that of the proposed future district distributor (D) road running east-west at the northern border of the Hung Shui Kiu, should be constructed in sunken form in minimising the physical constraints/ conflicts with this future proposed road, while minimising the noise and air impact on the future environment.

The sunken road section could be in the form of a depressed road running along and under the future district distributor road, which would be constructed in the form of an elevated viaduct running at about the same level as adjacent land use. Grade-separated crossing and interchanges could be constructed over the sunken main line without causing additional conflict in traffic movements.

As the Easterly Link continues east it rises to at-grade before crossing the diverted Ha Tsuen Channel, and goes up to the elevated section. At this at-grade section traffic would also be able to enter the local roads at Hung Shui Kiu via Slip Roads E and F. Vice versa, this at-grade interchange would at the same time provide a convenient access for the northbound traffic from Hung Shui Kiu and Tin Shui Wai areas to travel up the Deep Bay Link to SWC.

The elevated section will connect via Slip Roads C and D to the existing dual 2-lane Hung Tin Road Flyover across Castle Peak Road, which will be widened on both sides to become dual 3-lane before its connection with Tin Shui Wai West Interchange. It is envisaged that the length of widened section would be able to accommodate the weaving movements of, in particular, the northbound traffic.

Option 6A (Alignment running to the north of the Hung Shui Kiu SGA and connecting to Tin Ying Road)

Alignment Option 6A connects with the roundabout at Ha Tsuen Interchange beneath Deep Bay Link' Northern Section. This alignment routes along the northern periphery of Hung Shui Kiu and connects with Tin Ying Road at its section adjacent to the Western Drainage Channel outside Tin Shui Estate.

The proposed alignment will commence from a stub end provided at the lower level roundabout at Ha Tsuen Interchange. This dual 2-lane carriageway routes roughly along the northern portion of the future container backup areas further north of HSK NDA.

It is envisaged that the most economical choice of the Alignment Option 6A's main line section would be at-grade road built over embankments of not more than 3 m high. This construction method would unavoidably have drainage impact over the agriculture lands in its vicinity but it is considered feasible to mitigate such impact by re-provision of suitably designed secondary drainage systems in the form of pipe and/or box culverts.

The proposed alignment option would cut across four CDA sites at the immediate west of the Western Drainage Channel adjacent to Tin Shui Wai. To minimise the possible air and noise impact for future development on the CDA sites, the main line across these CDA sites could be designed in sunken form. But for the sake of cost-effectiveness, time optimization and minimizing land requirement, the preliminary design of this section would be based on the at-grade option.

At this point, Slip Road 1 will cross above the Tin Ying Road carriageway and tapers into the near-side lane of the southbound carriageway. The existing Tin Ying Road is the western primary distributor road serving the Tin Shui Wai New Town. To accommodate the increased traffic volume, the downstream section of Tin Ying Road would need to be widened from dual 2-lane to dual 3-lane. It is envisaged that this could be achieved by modifying a portion of the highway slope at the road embankment. However, the vehicular bridges across respectively the Lo Uk Tsuen Channel and Hung Shui Kiu Channel would need to be widened to accommodate the additional traffic lane at both sides.

The widened section runs along roughly the existing alignment to connect to Hung Tin Road at the grade separated interchange (Junction A) across Ping Ha Road. The existing flyover across Junction A, as well as the one further south at HSK Interchange would need to be widened from dual 2-lane to

become dual 3-lane.

C. OPTIONS EVALUATION FINDINGS

The two options are assessed with respect to multi-sectoral aspects covering Planning/ Landuse, Traffic, Visual/ Urban Design, Environment, Ecology, Cultural Heritage, Engineering feasibility, Cost, Programme, Degree of public objection, Planning and Community gain, etc. It is noted that while both options are proved to be engineering feasible and would bring about similar level of impact on a number of aspects, it is concluded that Option 4 performs better than that of Option 6A from the following perspective as summarised below:

Planning/ Landuse

- Extent of Interface Problems: Option 6A would create more extensive interface problems as it would affect a number of CDA sites as well as a number of committed high density residential R(A) zones along the western part of Tin Shui Wai New Town. Despite Option 4 would also affect a number of Village, R(D) and R(A) zones, it is considered that relatively less interface problems would be generated given the length for Option 4 would only be about half of the length of Option 6A and part of the alignment under Option 4 would be in sunken form (**Figure D**).
- Impact on development potential: Option 6A would bisect a number of CDA sites and would thereby seriously affect its development potential/ value, as well as pose much design constraints including noise, visual, etc on future development. While Option 4 would also encroach on a number of village and residential uses, the extent of negative impact induced would be relatively minor as given part of the alignment would be in sunken form.
- Impact on Hung Shui Kiu Development Plan: Option 6A would also pose many constraints on the future development of Hung Shui Kiu New Town as it would bisect the "Possible Extension Area" as indicated on the published Hung Shui Kiu Development Plan (**Figure E**). Option 4 would not pose similar impact on the Hung Shui Kiu Development Plan as such alignment is broadly in line with that of the proposed district distributor (Road D6) for Hung Shui Kiu New Town.

Traffic

- Option 4 would provide a shorter and more direct route for cross-boundary traffic resulting in lower journey times.
- Option 4 would run along the alignment of the Road D6 of the Hung Shui Kiu SGA and therefore the road reserve is already in place, compared with Option 6A which is predominantly a new alignment.
- Option 4 would provide better access to the Hung Shui Kiu SGA and the possible future Hung Shui Kiu West Rail Station.

Traffic Noise/ Air Quality Impact

- Option 4 would pose relatively less traffic noise/ air quality impact as the no. of existing population affected along the alignment would be less, given Option 6A would pass through a no. of high-rise block along Tin Wah Estate, Tin Shui Estate, Tin Oi Court and Lokwood Court and Option 4 would only affect some low-rise village housings including San Seng Tsuen, Shek Po Tsuen other low-rise residential developments. Preliminary assessment estimates that the total noise barrier required for Options 4 and 6A would be about 250m and 2000m respectively.

Visual/ Urban Design

- Option 4 would perform better in urban design terms as majority of the alignment could be in sunken form and also the extent of noise barriers, i.e. 250m is less than that of Option 6A, i.e. 2000m.
- Option 4 would pose relatively less visual impact as the no. of existing population affected along the alignment would be less, given Option 6A would pass through a no. of high-rise block along Tin Wah Estate, Tin Shui Estate, Tin Oi Court and Lokwood Court and Option 4 would only affect some low-rise village housings including San Seng Tsuen, Shek Po Tsuen other low-rise residential developments (**Figure F**).

Cultural Heritage

- Option 4 would not affect any existing archaeological site while Option 6A would pose impact on Tseung Kong Wai So Kwun Tsai archaeological site.

Ecology

- Option 4 would not encroach any land with ecological value while Option 6A would affect some wetland area located in Fung Kong Tsuen.

Cost

- The estimated cost for constructing Option 4 would be around **450 million**, which is less than that of Option 6A by about 31.5%.

Extent of Public Objection

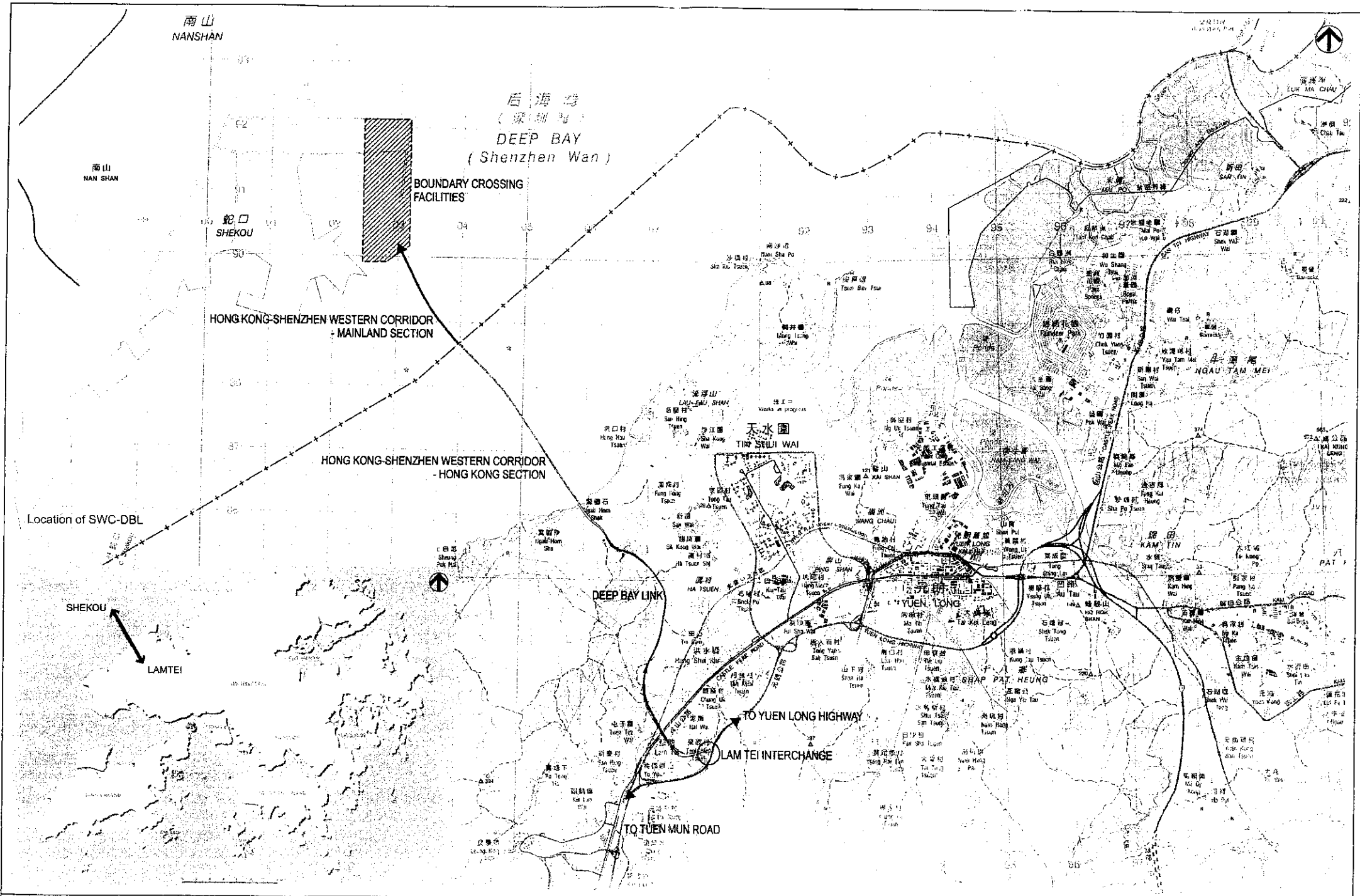
- Option 6A would likely bring about higher degree of public objection as it would affect about more existing population from visual, air quality and traffic noise grounds. The population affected by Option 6A would be up to about 25,000 which is far higher than that of Option 4, i.e. about 2500.

Programme

- In view of the anticipated level of public objection on Option 6A, it is envisaged that the implementation programme for Option 4 would be shorter. Should other factors are taken into account, e.g. longer extent of noise barriers, longer route with encroachment of more private lots, the time required to construct Option 6A would be longer.

Planning Gains

- Given the alignment for Option 4 would overlap with that of the proposed future district distributor road running east-west at the northern border of the Hung Shui Kiu New Development Area, it would reduce the development costs for the development of Hung Shui Kiu New Town in future. From another perspective, the Easterly Link built in sunken form of Option 4 would not incur much additional cost, with the realisation of the Hung Shui Kiu New Development Area.
- The implementation of Option 4 would serve as a catalyst for new town development at Hung Shui Kiu, providing additional land to meet the housing needs, providing additional population to enhance the viability of West Rail (possibly through the establishment of a new Hung Shui Kiu West Rail Station) and realising the planning intention of Hung Shui Kiu as a key cross-border gateway centre providing various supporting facilities and services.



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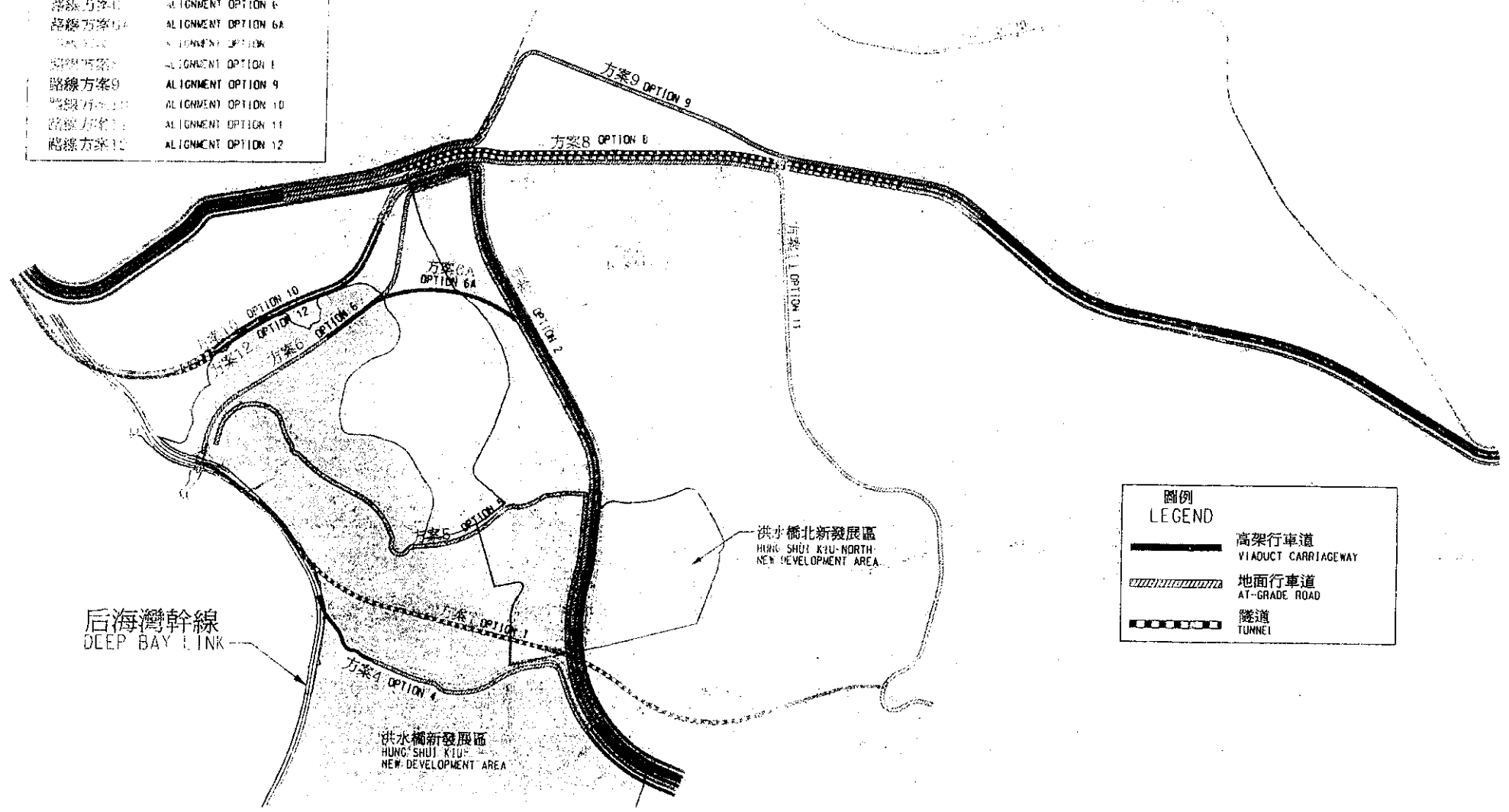
Alignments of Hong Kong - Shenzhen Western Corridor (SWC) and Deep Bay Link (DBL)

Checked	DH	Drawn	RW
Rev	0	Date	May 2004
Scale	N/A	Figure	A



圖例代號 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
路線方案9	ALIGNMENT OPTION 9
路線方案10	ALIGNMENT OPTION 10
路線方案11	ALIGNMENT OPTION 11
路線方案12	ALIGNMENT OPTION 12



圖例
LEGEND

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

Checked	DH	Drawn	RW
Rev	0	Date	May 2004
Scale	N/A	Figure	B



天水圍
TIN SHUI WAI

Shenzhen Western
Corridor under construction

Ngau Hom Shek

Option 6A

Slip Roads 1 and 2

Tin Ying Road

TIN SHUI WAI

Tin Shui Wai West Rail Station

HA TSUEN

Deep Bay Link
under construction

Hung Tin Road

Slip Roads A and B

Slip Roads E and F

Option 4

Slip Roads C and D

HUNG SHUI KIU

To Lam Tei Interchange /
Tuen Mun Road

Yuen Long
Highway

To Route 3

Tin Shui Wai
West interchange

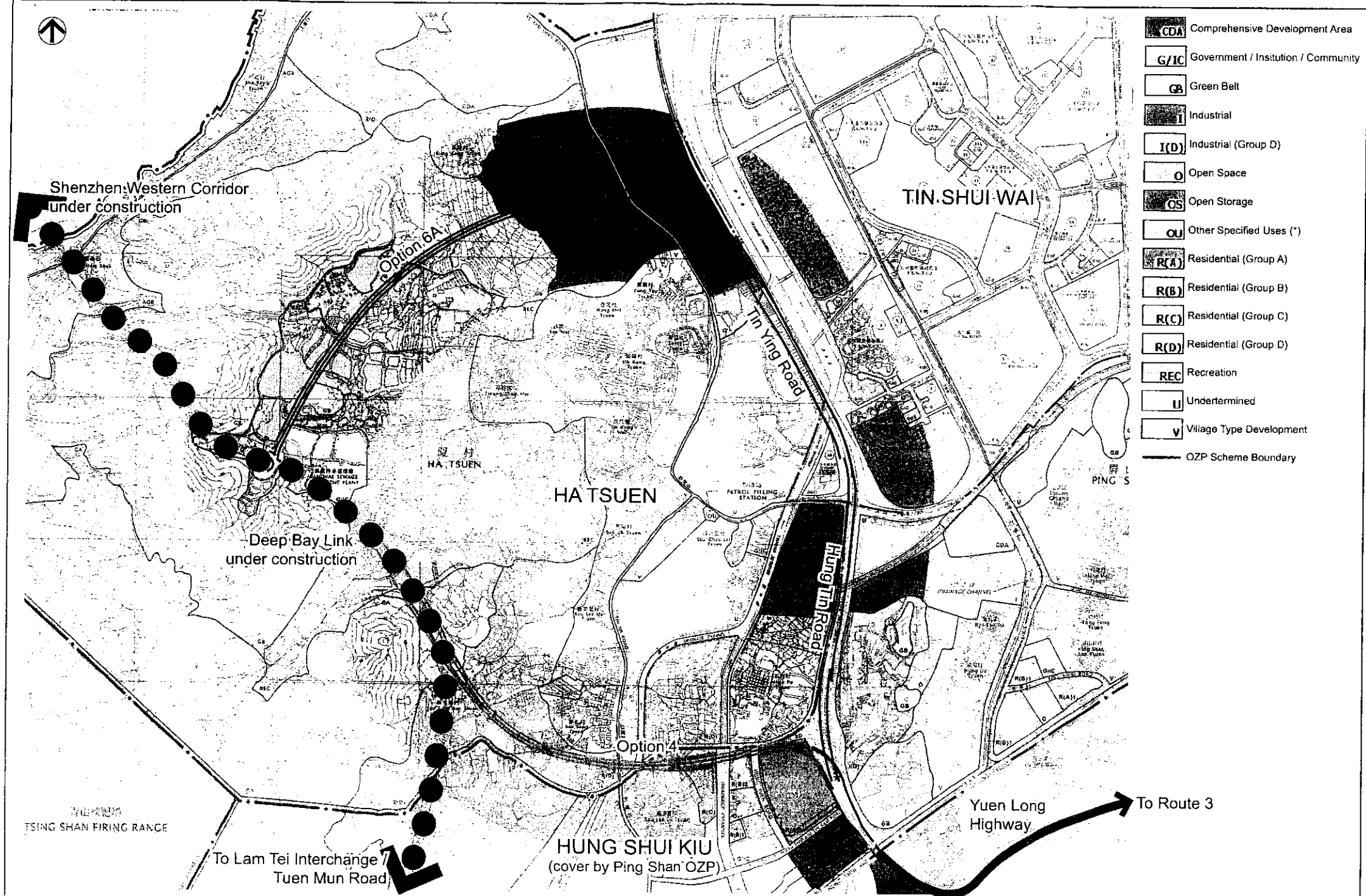
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Alignment Options 4 and 6A

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			C



- CDA** Comprehensive Development Area
- G/IC** Government / Institution / Community
- GB** Green Belt
- I** Industrial
- I(D)** Industrial (Group D)
- O** Open Space
- OS** Open Storage
- OJ** Other Specified Uses (*)
- R(A)** Residential (Group A)
- R(B)** Residential (Group B)
- R(C)** Residential (Group C)
- R(D)** Residential (Group D)
- REC** Recreation
- U** Undertermined
- v** Village Type Development
- OZP Scheme Boundary

Shenzhen Western
Corridor under construction

Ngau Hom Shek

Option 6A

Deep Bay Link
under construction

HATSUEN

Option 4

To Yuen Long
Highway/
Route 3

HUNG SHUI KIU

To Tuen Mun Road

LEGEND

-  Existing High Rise Residential Development
-  Future High Rise Residential Development
-  Existing Medium Rise Residential Development
-  CDA Development
-  Village Development
-  Low Density Residential Development

Checked	DH	Drawn	RW
Rev	1	Date	May 2004
Scale	N/A	Figure	F