

**LEGISLATIVE COUNCIL  
PANEL ON PLANNING, LANDS AND WORKS**

**Wan Chai Development Phase II Review**

**Follow-up to the discussion on 23 May 2006**

**(a) Alignment and Construction Forms of the Trunk Road**

Three corridors have been considered by the Consultants when examining possible Trunk Road alignments:

- “Offshore” alignment
- “Inland” alignment
- “Foreshore” alignment

*Offshore Alignment*

2. The Hong Kong Convention and Exhibition Centre (HKCEC) Extension presents a major physical constraint to the offshore Trunk Road alignments. From the connection with the Central – Wan Chai Bypass (CWB) tunnel in Central Reclamation Phase III (CRIII), the Trunk Road will not be able to turn northwards sharply enough to avoid the HKCEC Extension building or its foundations and the road cannot rise steeply enough to clear the roof of the HKCEC Extension (at +71mPD).

3. Further eastwards, an offshore Trunk Road tunnel will need to pass beneath the Cross Harbour Tunnel (CHT). Construction risk for any Trunk Road tunnel scheme crossing the immersed tube section of the CHT will be very high, with unacceptable consequences in the event of damage to the CHT.

4. Putting aside the risk of damage to the CHT, an offshore Trunk Road tunnel will need to be constructed as a deep bored tunnel in order to pass beneath the CHT. This will mean that the slip road connections in Wan Chai North (Slip Roads 1, 2 and 3) and in Causeway Bay (Slip Road 8) cannot be provided for this scheme.

5. The high construction risk of tunnelling across the CHT, the inability of providing the necessary slip road connections and, primarily, the physical obstruction of the HKCEC Extension make the Trunk Road offshore alignments not feasible.

#### *Inland alignment*

6. Inland Trunk Road alignments face major physical constraints, mainly due to conflicts with existing developments and highway infrastructure, and conflicts with the future rail infrastructure. At-grade or elevated Trunk Road inland alignments are self-evidently not possible in view of the scale of existing building development and infrastructure, and consideration of inland alignments is therefore confined to tunnel options.

7. After turning southwards from the connection with the tunnel constructed under CRIII, and crossing over the existing MTR Tsuen Wan Line, the Trunk Road will be obstructed by building development in Wan Chai North. Due to the high level of the Trunk Road as it passes over the MTR tunnel and Trunk Road gradient limitations, the inland tunnel alignment will conflict with the basement and foundations of the HKCEC Phase I and the Grand Hyatt Hotel (the Trunk Road tunnel cannot drop down fast enough after crossing the MTR Tsuen Wan Line to avoid conflict with the foundations of these buildings). Thereafter, the Trunk Road tunnel will also conflict with the China Resources Building, Causeway Centre and Sun Hung Kai foundations.

8. As it turns inland after passing over the MTR Tsuen Wan Line, the Trunk Road will also need to cross the North Island Line (NIL) rail tunnel, but both the Trunk Road and the NIL tunnels will be at the same level at this location, as both will cross over the MTR Tsuen Wan Line at a similar (adjacent) location. Therefore, either the presence of (or allowance for) the NIL will obstruct the Trunk Road inland alignment, or the implementation of a Trunk Road inland alignment will mean that the NIL cannot be constructed.

9. Further east, in Causeway Bay, the Trunk Road inland alignment

will need to run under Gloucester Road where it will conflict with both the NIL and Shatin to Central Link tunnels and the proposed Causeway Bay North station. Alignments further south of Gloucester Road, to avoid this conflict, are not possible due to the wall of existing development on the south side of Gloucester Road.

10. Connection to the existing Island Eastern Corridor (IEC) will need to be made to the north of Victoria Park. Self-evidently, inland alignments cannot be taken further inland around the south of the typhoon shelter to connect with the IEC in North Point, due to the mass of existing building development in the Tin Hau/Fortress Hill area. To achieve the connection with the IEC, the Trunk Road tunnel will need to rise up to a portal located in the northern 'knoll' area of Victoria Park. This not only results in demolition and permanent removal of this heavily wooded area of the park, but as the Trunk Road rises up to connect with the IEC it also will cut off the westbound Victoria Park Road.

11. As a consequence of the above physical obstructions and constraints, this Trunk Road inland alignment is found to be not feasible.

12. As the offshore and inland alignments are found not feasible due to conflict with existing development and infrastructure, the most reasonable and practical Trunk Road routing is along the foreshore of Wan Chai and Causeway Bay.

### Construction Forms

13. Several forms of construction for the Trunk Road have been assessed by the Consultants, namely, the At-grade Road Option, Deep Tunnel Option, Tunnel Option and Flyover Option.

#### *At-grade Road Option*

14. The At-grade Road Option is obviously not acceptable as it would require extensive reclamation at the Causeway Bay Typhoon Shelter (CBTS), thus not complying with the Protection of the Harbour Ordinance (PHO), and the reclaimed land will have to be used mainly for roads, leaving little opportunity for harbour-front enhancement.

### *Deep Tunnel Option*

15. The idea of constructing the Trunk Road by tunnel boring machine (Deep Tunnel Option) with a view to avoiding or minimizing reclamation has also been explored. It was found that the extent of reclamation required would be more than constructing the Trunk Road tunnel by the cut-and-cover method. Because of the big level difference, Slip Road 8 at Causeway Bay could not be provided, resulting in a functionally inferior Trunk Road. The Consultants suggested that there is no justification to pursue the Deep Tunnel Option.

### *Tunnel Option*

16. For the Tunnel Option for constructing the Trunk Road, three variations, as described below, together with their corresponding harbour-front enhancement ideas are considered. Figures showing these three variations are attached as Figures 1 to 6 at Annex D of LC Paper No. CB(1) 1519/05-06(03). Key features of the three variations are briefly described as follows:

17. ***Variation 1*** – the Trunk Road tunnel to be constructed under CRIII will be extended eastward to pass underneath the existing rock anchors of the CHT portal structure, and continues the tunnel to the east of the CBTS and connects to the northern side of the existing IEC.

18. ***Variation 2*** – the Trunk Road tunnel to be constructed under CRIII will be extended eastward to pass underneath the CHT at a position to the south of that in Variation 1 to avoid the rock anchor zone, and continues the tunnel to the east of the CBTS and connects directly into the IEC by reconstructing a section of the existing IEC. For widening the harbour-front promenade adjoining the CBTS and provision of a wide landscaped deck for extending Victoria Park to the harbour-front, the Victoria Park Road and associated connecting roads would be realigned inland.

19. ***Variation 3*** – except that the tunnel passes underneath the rock anchors of the CHT portal as in Variation 1, other arrangements will be

similar to Variation 2

*Flyover Option*

20. Under the flyover option, the tunnel to be constructed under CR III will be extended eastward, and will rise up onto an elevated road structure at the waterfront opposite to the Wan Chai Sports Ground. Figures 7 and 8 at Annex D of LC Paper No. CB(1) 1519/05-06(03) illustrate this option and the corresponding harbour-front enhancement idea.

*Comparison of Tunnel and Flyover Options*

21. The PHO requires the Harbour to be protected and preserved as a special public asset and a natural heritage of Hong Kong people. Therefore, when examining options for the Trunk Road, the one that may serve best to protect and preserve the Harbour should be identified. For the Flyover Option, the land formation by physical reclamation together with the water areas of the Harbour affected by flyover structures should be taken into account.

22. The comparison of the two options are described in details in the Consultants' comprehensive report submitted to the LegCo PLW Panel for consideration at the meeting of 23 May 2006 (Annex C of LC Paper No. CB(1) 1519/05-06(03) refers). Main points are summarized in the table below.

	<b>Tunnel Option</b> (based on Variation 1)	<b>Flyover Option</b>
Affected area of the Harbour:		
(a) Land formed	15 ha	11.5 ha
(b) Flyover structures over water	0.5 ha	3 ha
(c) Affected water area	-	4 ha
Impact to existing traffic	Some disruption at new tie-in to IEC	<ul style="list-style-type: none"> <li>• Major disruption at new tie-in to IEC</li> <li>• Major disruption due to reconstruction of Victoria Park Road</li> </ul>

		<b>Tunnel Option</b> (based on Variation 1)	<b>Flyover Option</b>
			connections
Other technical concerns (impacts to highways structures, etc)		Localised reconstruction of existing IEC at City Garden for merging with the Trunk Road	Reconstruction of existing IEC from Victoria Park Road to Victoria Centre
Planning and land use considerations	Along Wan Chai shoreline	Land formed can be used for harbour-front enhancement and pedestrian access to the waterfront	Land formed is partly occupied by the tunnel portal which constrains the extent of area for harbour-front enhancement and pedestrian access to the waterfront
	PCWA basin	PCWA basin can be developed into a vibrant marine recreational facility	Highway bridge piers and the low headroom clearance of the flyover restrict the development of the PCWA basin as a recreational facility
	Northern side of Victoria Park	Victoria Park can be extended to the harbour-front via a landscaped deck over the roads	With the flyover running along the northern side of Victoria Park, the landscaped deck over Victoria Park Road and extension of Victoria Park are impractical
	CBTS	The existing CBTS is preserved as far as possible	Part of the water area and the existing promenade will be occupied by bridge piers

		<b>Tunnel Option</b> (based on Variation 1)	<b>Flyover Option</b>
Environmental concerns	Noise & Air	<ul style="list-style-type: none"> <li>• Air quality concern at tunnel portal</li> <li>• Noise at tie-in to IEC (short 'new road' section of IEC)</li> </ul>	Significant air and noise impacts along flyover section in Causeway Bay and reconstructed IEC at North Point ('new road')
	Water Quality	No major operational impacts due to the scheme	No major operational impacts due to the scheme
	Visual	No significant visual impacts	Significant impacts in Wan Chai and (especially) in Causeway Bay (flyover along part of Wan Chai shoreline and through CBTS)
Time for construction		7 years	6 years
Costs*	Total Construction	HK\$20B	HK\$11B
	Annual Recurrent	HK\$110M	HK\$75M

\* (including WDII works & the section of CWB within the WDII project)

23. Based on the above, the Consultants concluded that the Tunnel option would serve better to protect and preserve the Harbour. Several key issues are highlighted as follows:

- the affected area of the Harbour under the Flyover Option will be more;
- the Flyover Option will have more visual impact and impact on existing traffic and highway structure; and
- the Flyover Option will limit the opportunities for harbour-front enhancement and improvement to access to harbour-front.

Nevertheless, construction and annual recurrent costs are both lower for the Flyover Option.

*Comparison of Tunnel variations*

24. Comparison between the three Trunk Road Tunnel Variations is tabulated below:

	<b>Tunnel Variation 1</b>	<b>Tunnel Variation 2</b>	<b>Tunnel Variation 3</b>
Area of permanent reclamation	15 ha	18.5 ha	16.5 ha
Impact to existing traffic	<ul style="list-style-type: none"> <li>• Some disruption at new tie-in to IEC</li> </ul>	<ul style="list-style-type: none"> <li>• Major disruption due to demolition of IEC and new tie-in to IEC</li> <li>• Major disruption due to reconstruction of Victoria Park Road, Causeway Bay Flyover and Gloucester Road Flyover</li> <li>• Major disruption at CHT approach roads due Trunk Road tunnel construction</li> </ul>	<ul style="list-style-type: none"> <li>• Major disruption due to demolition of IEC and new tie-in to IEC</li> <li>• Major disruption due to reconstruction of Victoria Park Road, Causeway Bay Flyover and Gloucester Road Flyover</li> </ul>
Other technical concerns (impacts to highways structures, etc.)	<ul style="list-style-type: none"> <li>• Localised reconstruction of existing IEC at City Garden for merging</li> </ul>	<ul style="list-style-type: none"> <li>• Reverse curves at the CHT area: undesirable for Trunk Road in tunnel</li> </ul>	<ul style="list-style-type: none"> <li>• Reconstruction of Victoria Park Road and associated connections and</li> </ul>

		<b>Tunnel Variation 1</b>	<b>Tunnel Variation 2</b>	<b>Tunnel Variation 3</b>
		with the Trunk Road	<ul style="list-style-type: none"> <li>• Reconstruction of Victoria Park Road and associated connections and Causeway Bay Flyover and Gloucester Road Flyover</li> <li>• Demolition of existing IEC from Victoria Park Road to City Garden</li> </ul>	Causeway Bay Flyover and Gloucester Road Flyover <ul style="list-style-type: none"> <li>• Demolition of existing IEC from Victoria Park Road to City Garden</li> </ul>
Impacts to existing development		Existing development not affected	Police Officers' Club needs to be demolished	Existing development not affected
Planning and land use concerns	Along Wan Chai shoreline	Land formed can be used for harbour-front enhancement and pedestrian access to the waterfront	Land formed can be used for harbour-front enhancement and pedestrian access to the waterfront	Land formed can be used for harbour-front enhancement and pedestrian access to the waterfront
	PCWA basin	PCWA basin can be developed into a vibrant marine recreational facility	PCWA basin can be developed into a vibrant marine recreational facility	PCWA basin can be developed into a vibrant marine recreational facility
	Northern side of Victoria Park	Victoria Park can be extended to the harbour-front via a landscaped deck over the ground level roads	Victoria Park is reconstructed with a wide landscaped deck over the ground level roads, to a widened promenade	Victoria Park is reconstructed with a wide landscaped deck over the ground level roads, to a widened promenade

		<b>Tunnel Variation 1</b>	<b>Tunnel Variation 2</b>	<b>Tunnel Variation 3</b>
	CBTS	The existing CBTS is preserved as far as possible	Filling in the corners of the CBTS can be used for additional waterfront uses	Filling in the south-east corner of the CBTS can be used for additional waterfront uses
Environmental concerns	Noise & Air	<ul style="list-style-type: none"> <li>• (Lesser) air quality concern at tunnel portal</li> <li>• Noise at tie-in to IEC (short 'new road' section)</li> </ul>	<ul style="list-style-type: none"> <li>• Air quality concern at tunnel portal</li> <li>• Noise along reconstructed IEC (long 'new road' section)</li> </ul>	<ul style="list-style-type: none"> <li>• Air quality concern at tunnel portal</li> <li>• Noise along reconstructed IEC (long 'new road' section)</li> </ul>
	Water Quality	No major operational impacts due to the scheme	No major operational impacts due to the scheme	No major operational impacts due to the scheme
	Visual	No significant visual impacts	No significant visual impacts	No significant visual impacts
Time for construction		7 years	8 years	8 years
Costs*	Total Construction	HK\$20B	HK\$28B	HK\$25B
	Annual Recurrent	HK\$110M	HK\$125M	HK\$123M

\* (including WDII works & the section of CWB within the WDII project)

25. The Consultants are of the view that neither Tunnel Variation 2 nor 3 perform as well as Tunnel Variation 1. The reclamation extent is of particular importance in respect of the PHO. Tunnel variation 1 requires a lesser extent of reclamation than that of Tunnel Variations 2 and 3 and best meets the PHO and the CFA's 'overriding public need test'.

**(b) Public views on Trunk Road alignment and construction forms**

26. The main purpose of the Envisioning Stage of the HER project is

to collect views of the public regarding the construction of the Trunk Road and the enhancement of the harbour-front in the areas concerned. Views and proposals received are described in details in the Public Engagement Report (Annex B of LC Paper No. CB(1) 1519/05-06(03) refers). Some relevant points are recapitulated below.

- At the public forums, most attendees did not favour an elevated road option as it will bring visual impact to the waterfront. Tunnel or depressed roads are to be preferred.
- At the community charrettes, the participants realized that if building the Trunk Road proves to be the most practicable solution in the traffic problem, some reclamation may be necessary. Most of them agreed that if there is no alternative and there is an overwhelming case for the construction of the Trunk Road to solve the traffic congestion problem, a tunnel form is preferred, ideally a submerged tube, as it allows more flexible use of the waterfront and causes least adverse visual impacts. The participants also recognised that depending on the form of the Trunk Road adopted, there would be different land availability.
- Majority of respondents from road-side and self-administered surveys preferred tunnel whereas respondents of telephone survey had higher preference for flyover probably because they could enjoy the beautiful scenery of the harbour as they drive or travel along the flyover.
- At the Consolidation Forum, while most participants agreed to a tunnel option, a few expressed that the flyover option should not be dropped yet as a good architectural design may bring about visual amenity and flyover is much cheaper in construction and maintenance costs.

#### *Public submissions*

27. Swire Properties submitted “A Proposal for the Wan Chai – Causeway Bay Shoreline”, incorporates a shallow Trunk Road tunnel, in

reclamation, through the HKCEC water channel and along the Wan Chai shoreline. In the Swire's scheme the Trunk Road tunnel swings southwards around the CHT portal and through the south-west corner of the CBTS, in reclamation, before turning northwards to connect directly into the IEC at North Point, by demolishing and reconstructing a substantial length of the existing IEC. To widen the harbour-front promenade along the CBTS, the proposal also involved realigning the existing Victoria Park Road southward (i.e. landward) into the Victoria Park. Trunk Road Tunnel Variation 2 as presented above was developed based on this proposal with necessary refinement to achieve technical feasibility.

28. Royal Hong Kong Yacht Club (RHKYC) also submitted a proposal titled, "Preserving the Vibrancy and Diversity of Victoria Harbour". It involved a shallow Trunk Road tunnel, in reclamation, through the HKCEC water channel and along the Wan Chai Shoreline. The Trunk Road tunnel then passes under the CHT portal area and under the CBTS (deep enough not to require reclamation) before connecting to the outside of the existing IEC at North Point. This Trunk Road option was similar to Trunk Road Tunnel Variation 1 presented above. RHKYC went on suggesting the depression of parts of the IEC which will have large impacts on the existing highway structures and traffic.

29. The Eastern District Council has recently held a concept design competition "A New Face for the Eastern Harbourfront". The winning entry, "Healthy Life Healthy City" is based on a Trunk Road tunnel option similar to Trunk Road Tunnel Variation 2.

30. In general, therefore, public views clearly favour a Trunk Road tunnel option. There is consistency in the views and proposals for a shallow cut-and-cover tunnel along the Wan Chai shoreline, in reclamation; and for a deeper tunnel, beneath the seabed through the CBTS, although there are different views about the need for reclamation in the corners of the CBTS.

**(c) Empower the public with sufficient information**

31. The suggestion of the LegCo Panel to introduce to the public the Concept Plan drawings and models for the planning ideas for the WDII Review will be considered in the Realization Stage. The suggestion is in line with that in the report for the Envisioning Stage of HER that it is essential to help the public to visualize the concepts through perspective drawings, physical models and/or computer animations.

**(d) Water-related features on reclaimed land**

32. As we understand, the Hon Patrick Lau Sau-shing's suggestion is to introduce some water-related features on part of the reclaimed land above the sea level. This suggestion can be explored when the Concept Plan is developed for further public engagement in the Realization Stage.

**Housing, Planning and Lands Bureau  
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