

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

834TH – Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **834TH**, entitled “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – detailed design and site investigation”, to Category A at an estimated cost of \$621.9 million in money-of-the-day prices; and
- (b) the retention of the remainder of **834TH** in Category B.

PROBLEM

We need to construct the Hong Kong Boundary Crossing Facilities (HKBCF) under the mode of “separate locations of boundary crossing facilities (BCF)”¹ to serve the Hong Kong–Zhuhai–Macao Bridge (HZMB).

/PROPOSAL.....

¹ Under the mode of “separate locations of BCF”, the BCFs of the three governments of Guangdong Province, Hong Kong Special Administrative Region and Macao Special Administrative Region will be separately located within their respective territories.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade part of **834TH** to Category A at an estimated cost of \$621.9 million in money-of-the-day (MOD) prices for engagement of consultants to undertake the detailed design and associated site investigation for the HZMB HKBCF.

PROJECT SCOPE AND NATURE

3. The scope of **834TH** (the Project) includes –
- (a) reclamation to provide land for the development of the HKBCF;
 - (b) cargo processing facilities including kiosks for clearance of goods vehicles, customs inspection platforms, X-ray buildings, etc.;
 - (c) passenger related facilities including processing kiosks and examination facilities for private cars and coaches, passenger clearance building and halls, etc.;
 - (d) accommodation for and facilities of the Government departments providing services in connection with the HKBCF;
 - (e) provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange, transport drop-off and pick-up areas, vehicle holding areas, passenger queuing areas, road networks, footbridges, fencing, sewage and drainage systems, water supply system, utilities, electronic system, and traffic control and information system, etc.;
 - (f) provision of road access for connection of the HKBCF to the HZMB Hong Kong Link Road, the Tuen Mun-Chek Lap Kok Link (TM-CLKL) and the Airport;
 - (g) reprovisioning of the affected Airport's facilities such as the existing east rescue berth; and

/(h)

- (h) provision of other facilities for connection with the Airport such as an Automated People Mover system to connect the Airport Terminal with the HKBCF.

—————
The proposed location and view (artist's impression) of the HKBCF is at Enclosures 1 and 2 respectively.

4. The part of the project we now propose to upgrade to Category A comprises –

- (a) detailed design of the works described in paragraph 3 above;
- (b) associated site investigation and works supervision; and
- (c) contract procurement including preparation of tender documents and assessment of tenders.

5. We plan to commence the detailed design of the proposed works in September 2009 for completion in June 2012.

JUSTIFICATIONS

HKBCF

6. The governments of Guangdong, the Hong Kong Special Administrative Region and Macao Special Administrative Region (Macao SAR) have since 2003 formed an HZMB Advance Work Coordination Group (AWCG) to commence the preparatory work of the HZMB. In 2004, the AWCG commissioned the China Highway Planning and Design Institute (HPDI) to conduct a feasibility study for the HZMB. The National Development and Reform Commission (NDRC) also formed the HZMB Task Force in 2007 to push forward the project. The Task Force was led by the NDRC, with representatives from the Ministry of Transport, the Hong Kong and Macao Affairs Office, and the governments of Hong Kong, Guangdong and Macao as members. At its meeting on 7 January 2007, the Task Force recommended that the BCF of each government should be set up within their respective territories.

/Previous

Previous Legislative Council (LegCo) Approval

7. On 6 June 2008, the LegCo Finance Committee approved funding of \$86.9 million to engage consultants to undertake the investigation and preliminary design for the HKBCF.

Proposed Site Location

8. In the light of the recommendation of the Task Force in January 2007 (paragraph 6 above refers), Highways Department commissioned a site selection study in May 2007 to identify a suitable location for the HKBCF. The study examined various possible sites, including different reclamation options at the eastern and western waters off the Airport Island; reclamation, land formation and hybrid options at San Shek Wan; an Airport Island option; and a reclamation option at Tai Ho.

9. Completed in early 2008, the study finally recommended the preferred location of the HKBCF to be reclaimed at the waters off the north-east of the Airport Island. This was reaffirmed after further reviewing the various options under the investigation and preliminary design study.

HKBCF as a Transportation Hub

10. Together with the HZMB Main Bridge and the Hong Kong Link Road (HKLR)² as well as the Tuen Mun Western Bypass (TMWB) and TM-CLKL, the proposed HKBCF site enables the formation of a strategic road network linking Hong Kong, Zhuhai, Macao and Shenzhen, thereby further enhancing the transportation and aviation hub status of Hong Kong. The synergy effect will be considerable.

11. With its proximity to the Hong Kong International Airport, the HKBCF will serve as a strategic multi-modal transportation hub. It is our current plan that the HZMB related projects, including the HKBCF and the HKLR, should be completed at the same time as that of TMWB and the TM-CLKL.

/Other.....

² The HKLR is about 12 km dual three-lane road connecting the HZMB Main Bridge at the HKSAR boundary with the proposed HKBCF at the north-east of the Airport Island.

Other Advantages of the Proposed Site Location

12. The preferred site would comparatively have less impacts on hydraulics and environment, in particular on marine ecology and water quality. For instance, the preferred site location will cause less overall water resistance to the main flow path and less impact on flood discharge capacity of the Pearl River; less disturbance to the movement corridor of Chinese White Dolphins between Sha Chau and west of Lantau Island; less effect on navigation safety; and less damage to the natural hillside or shoreline, etc. As the proposed reclamation can be combined with that for the proposed TM–CLKL landfall, the total area of reclamation and length of seawall can be significantly reduced when compared with other reclamation alternatives. Also, with the proximity of the preferred site to the Airport and after reprovisioning of some affected Airport's facilities, air/land transit of passengers can be facilitated by extending the existing Automated People Mover to connect the Airport Terminal with the HKBCF. It will be very convenient for passengers to switch to different modes of transport at the HKBCF. Furthermore, this site location would also provide better integration with the proposed TM-CLKL, which will land on Lantau Island via the HKBCF site.

Impact of the HKBCF

13. During the public consultation on the site location of the BCF, some Tung Chung residents expressed concerns on the visual impact of the HKBCF (paragraph 25 below refers). We consider that the visual impact is minimal because all the buildings on the HKBCF are very limited in terms of height (the largest building in the HKBCF will be the passenger clearance building, which will be similar to the existing Airport Terminal in terms of height). Furthermore, the distance from the HKBCF to the closest private residential development along Tung Chung shoreline is about 2km (being about the distance between Central and Jordan) and this should be sufficiently far apart. There are also some concerns in the local community on visual impact arising from the part of the original sea viaduct of the HKLR close to Tung Chung and before the HKBCF. We have now addressed these concerns by adopting a hybrid tunnel-cum-at-grade scheme as shown at Enclosure 2. A comparison of the effect of the original viaduct scheme and the tunnel-cum-at-grade scheme is at Enclosure 3. The Tung Chung residents also showed concern on the noise and air impact on them, which would be dealt with in accordance with the Environmental Impact Assessment Ordinance (EIAO). The substantially completed Environmental Impact Assessment (EIA) results show that the proposed site location will meet the requirements under the EIAO.

/Alternative.....

Alternative Locations Considered

14. As mentioned in paragraph 8 above, we have considered seven alternative locations. They boil down to two broad categories: (a) constructing the HKBCF along the coastline at San Shek Wan; and (b) constructing the HKBCF at the western waters off the Airport Island. These two categories of alternatives are not considered suitable primarily on grounds that they pose significant problems in hydraulics, navigation channels and environmental conservation. Neither could they achieve a road network as described in paragraphs 10 to 11 above with synergistic effect as strategic as the proposed site location. Comparison of them and the proposed site location are set out in Enclosure 4.

15. After the further review of the HKBCF options under the current investigation and preliminary design (I&PD) study of the HKBCF, the consultant has reaffirmed the recommendation of locating the preferred location of the HKBCF at the waters off the north-east of the Airport Island. We have completed substantially the EIA and other impact assessments on the HKBCF at the preferred location. Current indications are that the project is EIA-compliant. We will complete the preliminary design of the HKBCF by September 2009. We need to commence the detailed design and associated site investigation for the HKBCF as soon as possible such that the HKBCF is completed in time for the commissioning of the HZMB. In view of the multi-disciplinary nature of the project and the lack of in-house resources, we propose to employ consultants to undertake the detailed design and supervise the associated site investigation works.

Job Creation

16. The implementation of the HKBCF, HKLR, TM-CLKL and TMWB projects are estimated to create about 18 000 jobs (about 3 000 for professional / technical staff and 15 000 for labourers) during the construction stage.

17. We estimate that the proposed detailed design and site investigation works will create about 250 jobs (190 for professional/technical staff and 60 for labourers) providing a total employment of about 4 100 man-months.

FINANCIAL IMPLICATIONS

18. We estimate the cost of this part of the Project to be \$621.9 million in MOD prices (see paragraph 19 below), made up as follows –

/\$ million.....

		\$ million	
(a)	Consultants' fees	442.5	
	(i) review of preliminary design	44.3	
	(ii) detailed design	287.7	
	(iii) preparation of tender documents and assessment of tenders	110.5	
(b)	Supervision of site investigation	6.4	
(c)	Site investigation	80.0	
(d)	Contingencies	52.9	
	Sub-total	581.8	(in September 2008 prices)
(e)	Provision for price adjustment	40.1	
	Total	621.9	(in MOD prices)

———— A breakdown of the estimated consultants' fees is at Enclosure 5.

19. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (Sep 2008)	Price Adjustment Factor	\$ million (MOD)
2009 – 2010	21.7	1.03500	22.5
2010 – 2011	277.4	1.05570	292.9
2011 – 2012	188.5	1.07681	203.0
2012 – 2013	94.2	1.09835	103.5
	581.8		621.9

20. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2009 to 2013. We will engage consultants to undertake the detailed design of the reclamation works on a lump-sum basis without provision for price adjustment as the duration of the consultancy will not exceed 12 months. We will also engage consultants to undertake the detailed design of the remaining works on a lump-sum basis with provision for price adjustment as the duration of the consultancy will exceed 12 months. The consultants will supervise site investigation works under a contract, with provision for price adjustment, to be awarded through competitive tendering.

21. The proposed detailed design and associated site investigation works will not give rise to any annual recurrent expenditure.

PUBLIC CONSULTATION

22. In July 2007, we consulted environmental concern groups and fishermen representatives on their views on the possible HKBCF site locations. Most of the environmental concern groups agreed that a reclamation to the north-east of the Airport would have less environmental impacts than the other options and thus would be worthy of further consideration. Some however expressed objection to reclamation, irrespective of location, as a matter of principle. The fishermen representatives also expressed their objection to any reclamation for fear that it would affect their fisheries production.

23. We consulted the Islands District Council (IDC) on the possible options for the location of the HKBCF on 19 September 2007. Some members supported the option of locating the HKBCF at the waters off the north-east of the Airport due to its potential synergy benefits with the Airport and the overall economic benefits to the whole Hong Kong territory. Some members however indicated their preference to locating the HKBCF near San Shek Wan to help boost the local development and economy. Nevertheless, we do not recommend the San Shek Wan option due to its adverse impact on Chinese White Dolphins and its significant adverse noise, air, visual and landscape impacts, including significant hill cutting, removal of woodland with landscape value and clearance of an archaeological site.

24. On 25 April and 16 May 2008, we updated Members of the Legislative Council Panel on Transport (the Panel) on the progress of the planning work for the HZMB, the HKBCF and the HKLR. On 6 June 2008, the Finance Committee approved funding of \$86.9 million to engage consultants to undertake the investigation and preliminary design for the HKBCF.

25. From September 2008 to October 2008, we conducted a series of public engagement on the HKBCF, including ten focus group meetings with Chairmen of the Islands, Tuen Mun and Yuen Long District Councils, professional institutions, Heung Yee Kuk, Area Committees (Lantau Island), Area Committees (Tuen Mun), trade associations, fisherman groups, marine industry and green groups; and held two public workshops concerning the Hong Kong-Shenzhen-Zhuhai corridor at Tung Chung and Tuen Mun. To further engage the views from local residents, 13 meetings with Tung Chung residents, Tai O Rural Committee and Tung Chung Rural Committee were held in early 2009. Some Tung Chung residents expressed concerns on the environmental and visual impacts that might be caused by the HKBCF proposed to be located at the waters off the north-east of the Airport Island and expressed their preference of locating the HKBCF at the west side of the Airport Island instead. Furthermore, some residents, particularly the village community, expressed their preference of locating the HKBCF at San Shek Wan to help boost the local development and economy. We have considered the pros and cons of the three schemes thoroughly and a comparison among them is given in paragraph 14 above and Enclosure 4. In particular, to address the residents' concerns on visual impact, we have replaced the original viaduct scheme for the HKLR with a tunnel-cum-at-grade scheme as explained in paragraph 13 above. As regards the concern on the noise and air quality impacts due to the proposed BCF, our initial findings indicate that they satisfy the requirement under EIAO. Furthermore, in response to the concerns expressed by Sha Lo Wan residents on the visual impact caused by the HKLR, we propose to modify the viaduct portion thereat by increasing the span length from 60m to 180m.

26. On 17 April 2009, we consulted the IDC on our proposed HKBCF option at the waters off the north-east of the Airport. Although some DC members representing the interest of residents living in north west Lantau had indicated their preference for a HKBCF west of the Airport Island, most of the DC members supported the implementation of the project with the HKBCF at the above proposed location. Some members suggested that an inter-Bureau group with participation from DC members be formed to discuss proposals to maximize the economic benefits of the HZMB to Lantau. The Administration will follow up.

27. We consulted the Panel on 24 April 2009 regarding our plan to submit the funding application for the detailed design and associated site investigation. The Panel supported the funding application and requested the Administration to provide information on the programme of certain developments around Tung Chung area.

ENVIRONMENTAL IMPLICATIONS

28. The reclamation works, dredging operation, extension of Automated People Mover, and road bridges under the project are designated projects under Schedule 2 of the EIAO (Cap. 499) and environment permits are required for their construction and operation. We have carried out an EIA study to address the potential environmental impacts of the Project in detail. We will submit soon the EIA report to the Director of Environmental Protection under the EIAO for approval and will follow the statutory procedures of making the EIA report available for comment by the public and the Advisory Council on the Environment.

29. The proposed detailed design consultancy and site investigation works will generate very little construction waste. We will require the consultants to fully consider measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible in the future implementation of the Project.

HERITAGE IMPLICATIONS

30. The proposed detailed design and site investigation works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

31. The proposed detailed design and associated site investigation works do not require any land acquisition.

/BACKGROUND.....

BACKGROUND INFORMATION

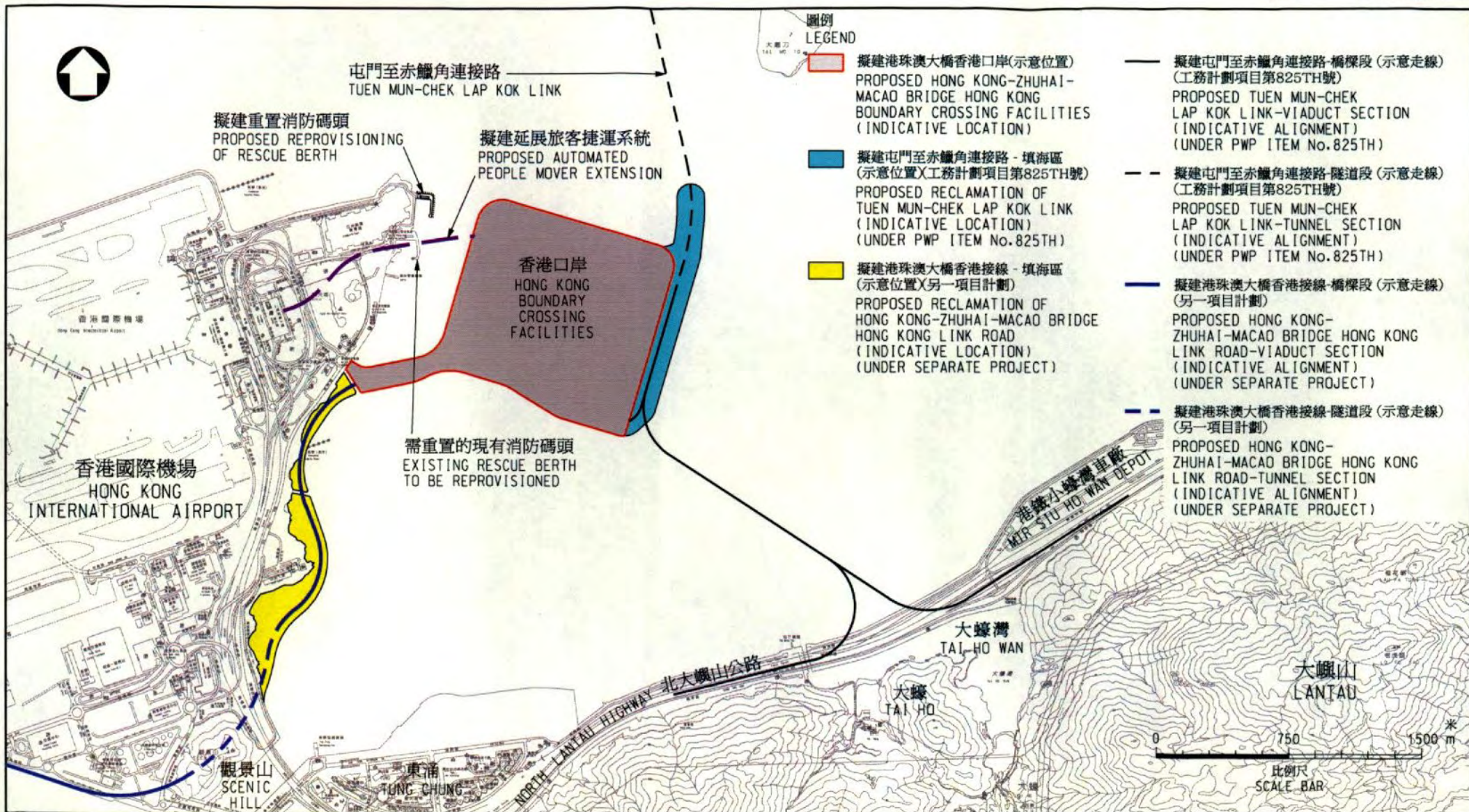
32. In May 2007, we engaged a consultant to undertake the HZMB HKBCF Site Selection Study – Feasibility Study at an estimated cost of \$3.85 million under **Subhead 5101CX** “Civil engineering works, studies and investigations for items in Category D of the Public Works Programme”. The consultant completed the study in March 2008.


33. We included **834TH** in Category B in March 2008.

34. In June 2008, we upgraded part of **834TH** to Category A as **837TH** “Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – investigation and preliminary design” at an estimated cost of \$86.9 million in MOD prices. We engaged a consultant in July 2008 to undertake the investigation and preliminary design for the project. The consultant has completed substantially the EIA and other impact assessments. The consultant will complete the preliminary design by September 2009.

35. The proposed detailed design and associated site investigation works will not involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for the tree preservation in the detailed design of the project. We will also incorporate tree-planting proposals, where possible, in the construction phase.

Transport and Housing Bureau
April 2009



<p>圖則名稱 plan title</p>	<p>設計 designed K Y HO 27/03/09</p>	<p>繪圖 drawn Y L SHIU 31/03/09</p>	<p>圖則編號 plan no. HZM6834TH-SK0034</p>	<p>比例 scale 1:30000</p>
<p>工務計劃項目第834TH號 - 港珠澳大橋香港口岸 PWP ITEM NO. 834TH - HONG KONG-ZHUHAI-MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES</p>	<p>覆核 checked K MA</p>	<p>批准 approved K M BOK</p>	<p>© 版權所有 COPYRIGHT RESERVED</p>	
<p>港珠澳大橋香港工程管理局 HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE</p>			<p> HIGHWAYS DEPARTMENT HONG KONG 路政署</p>	



從東涌望向香港口岸的景觀
VIEW OF HONG KONG BOUNDARY CROSSING FACILITIES FROM TUNG CHUNG

圖則名稱 plan title

工務計劃項目第834TH號 - 港珠澳大橋香港口岸 - 景觀構思圖
PWP ITEM NO. 834TH - HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES - VIEW (ARTIST'S IMPRESSION)

設計 designed

K Y HO 03/04/09

覆核 checked

K MA

繪圖 drawn

C K WONG 03/04/09

批准 approved

K M BOK

圖則編號 plan no.

HZM6834TH-SK0031

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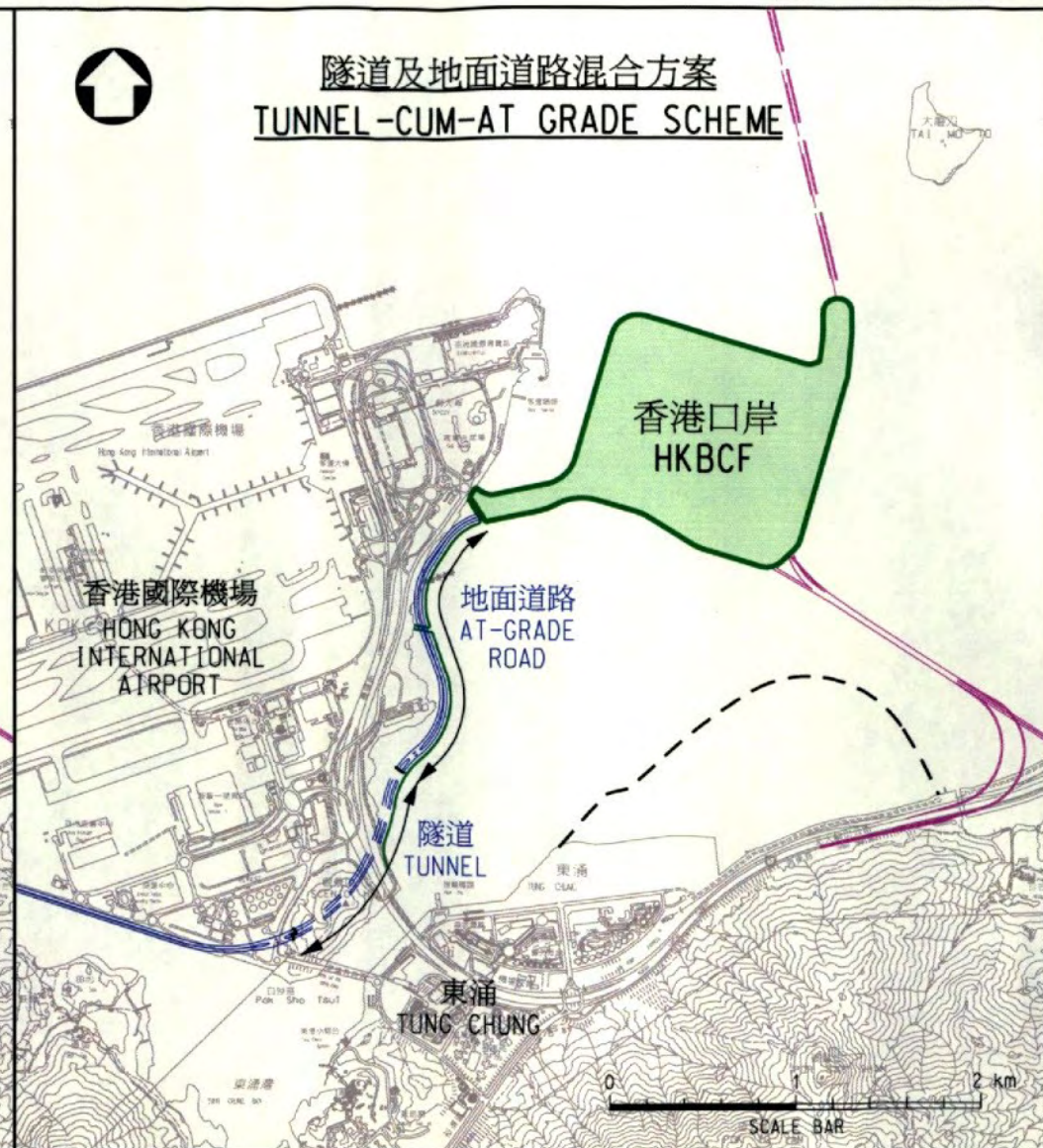
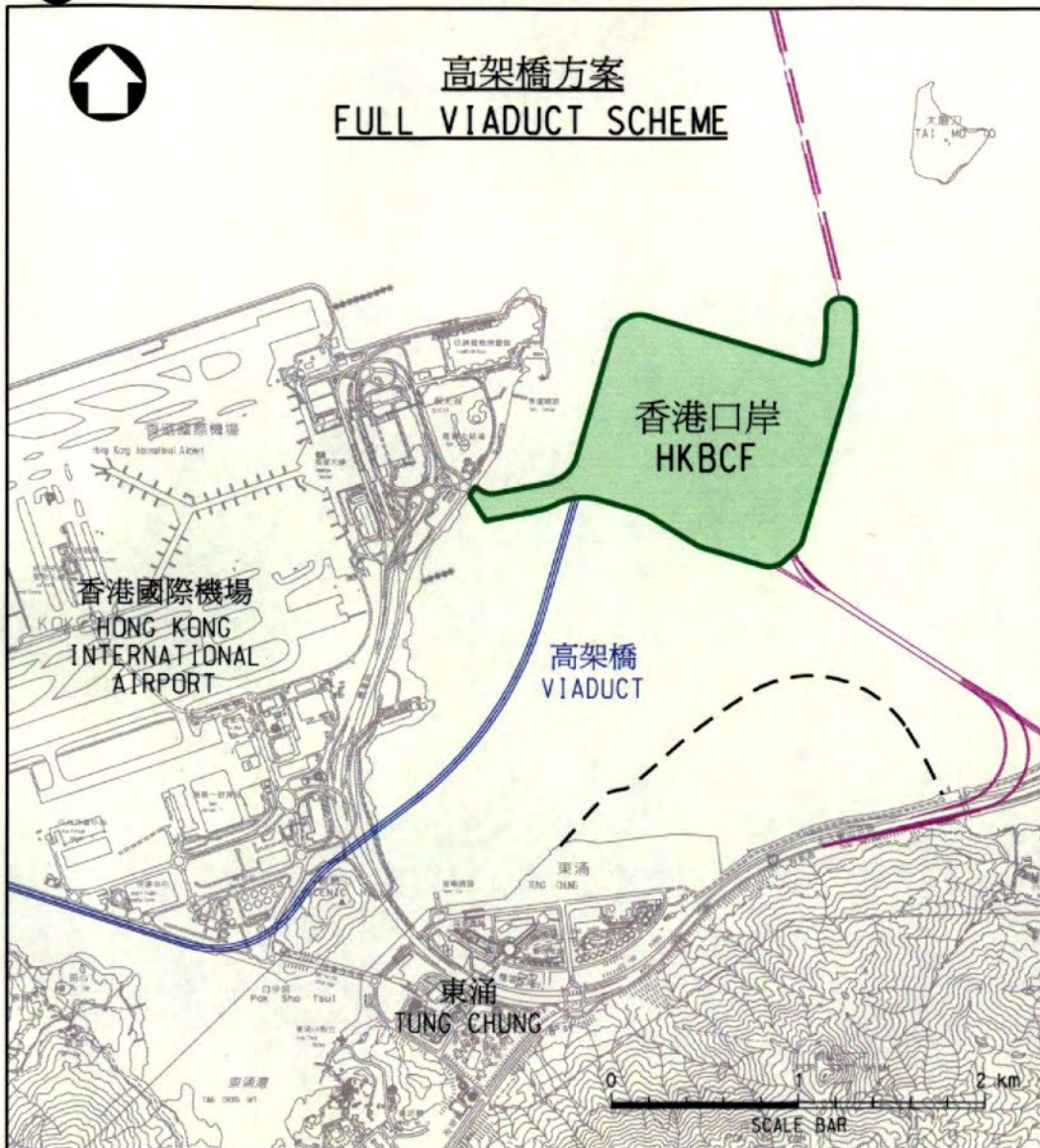
HIGHWAYS
DEPARTMENT
HONG KONG

比例 scale

N.T.S.

路 香
政 港
署

港珠澳大橋香港工程管理處
HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE

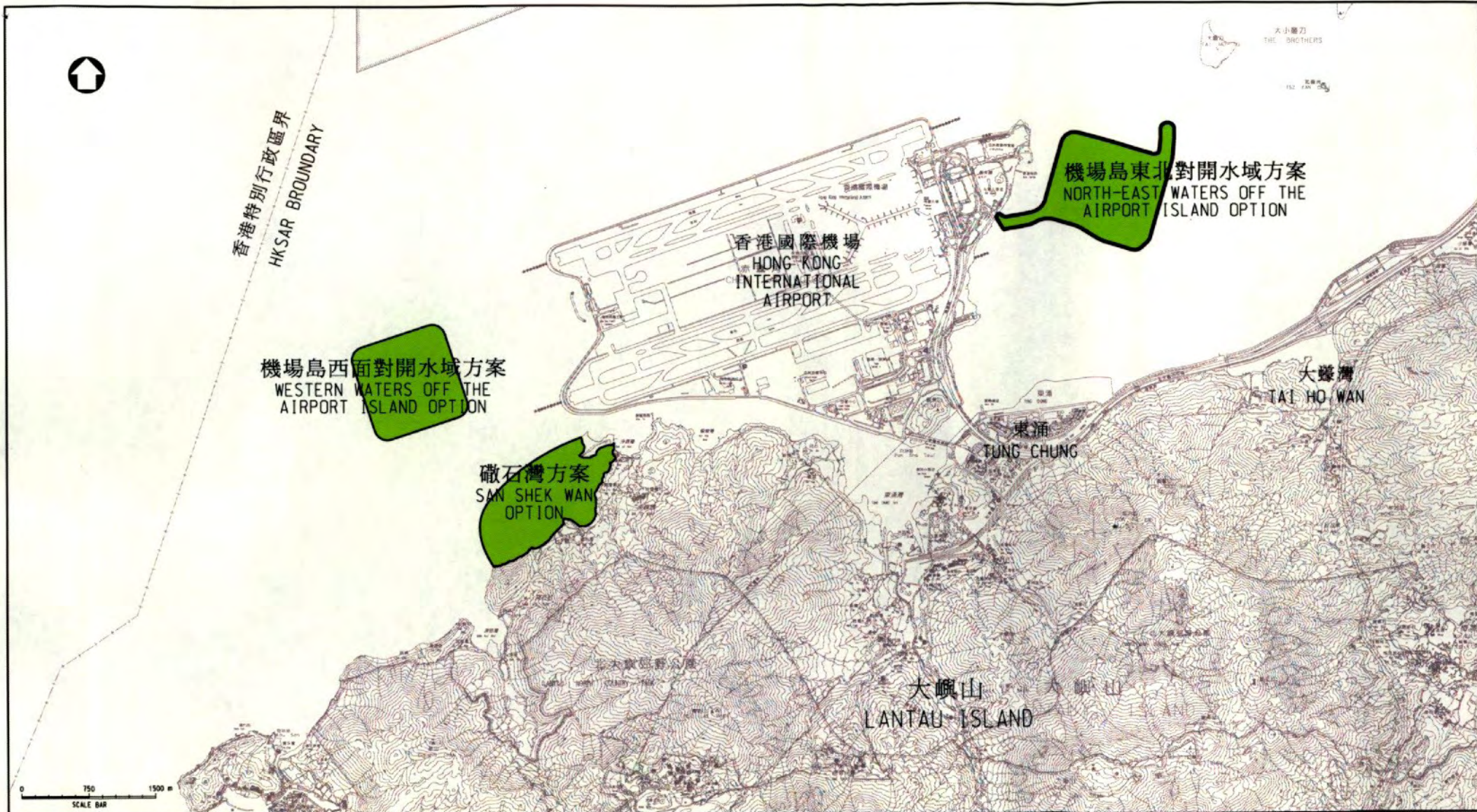


圖則名稱 plan title

香港接線 - 機場島東北水域走線方案
HONG KONG LINK ROAD -
ALIGNMENT SCHEMES AT NORTH-EAST OF AIRPORT ISLAND

設計 designed K Y HO 08/04/09	繪圖 drawn Y L SHIU 08/04/09
覆核 checked K MA	批准 approved K M BOK
港珠澳大橋香港工程管理處 HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE	

圖則編號 plan no. HZM6834TH-SK0036	比例 scale 1:40000
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 HIGHWAYS DEPARTMENT 路政署 HONG KONG 香港	



圖則名稱 drawing title

香港口岸選址
HONG KONG BOUNDARY CROSSING FACILITIES (HKBCF) LOCATIONS

設計 designed K Y HO 22/04/09	繪圖 drawn K L LEUNG 22/04/09	圖則編號 drawing no. HZM6834TH-SK0038	比例 scale 1:60000
覆核 checked K MA	批准 approved K M BOK	© 版權所有 COPYRIGHT RESERVED	
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834TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities

A comparison of the effect of the full viaduct scheme and the tunnel-cum-at grade scheme for the section of HKLR between Scenic Hill and the HKBCF.

	Full Viaduct Scheme	Tunnel-cum-at grade Scheme
Length	2.8km	2.7km
Shortest distance between the road and the Tung Chung North development	700m	920m
Road Level	+17mPD to +35mPD	+6.5mPD
Visual	Standing out structure in Tung Chung Bay	Blend in with the existing Airport Island

**834TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities
Comparison of the proposed HKBCF site location with another two categories of alternatives**

North-east waters off the Airport Island (NECLK) option	San Shek Wan (SSW) option	Western waters off the Airport Island (WCLK) option
<ul style="list-style-type: none"> ● The Islands District Council as a whole support the NECLK option. 	<ul style="list-style-type: none"> ● Some Sha Lo Wan and Shan Shek Wan villagers support this option in the hope of possible future development of Lantau West in future and some Tung Chung residents support this option. 	<ul style="list-style-type: none"> ● Some Tung Chung residents support this option.
<p><u>Transport and Economic functions</u></p> <ol style="list-style-type: none"> 1. HKBCF locating at the north east waters of the Airport Island and connecting with TM-CLKL, the transport network for Airport, Northwest New Territories and Lantau Island will be formed. Connectivity between Lantau Island and urban areas and the transport network for Tung Chung town will be improved. 2. The HZMB, together with the HKBCF locating at the northeast waters of the Airport Island, the TM-CLKL and TMWB, can form a convenient strategic network linking Hong Kong, Shenzhen, 		<p><u>Transport and Economic functions</u></p> <ol style="list-style-type: none"> 1. WCLK option would cause 2km detour for the HKLR inducing a greater overall social cost (e.g.time and energy source), and causing more exhausted gases emission (annual NOx emission will be 60 tonnes additional)

North-east waters off the Airport Island (NECLK) option	San Shek Wan (SSW) option	Western waters off the Airport Island (WCLK) option
<p>Zhuhai and Macao. Besides, HKBCF will be served by a variety of transport modes in close proximity to each other (including the Airport, the SkyPier, the Airport Express Line and Tung Chung Line), thus forming a multi-modal transportation-hub.</p> <p>3. With the Airport People Mover (APM), HZMB-air transit passengers can get to Airport without the need of custom clearance at HKBCF. Therefore, the clearance time is shortened.</p> <p>4. With AsiaWorld-Expo, hotels, shopping mall and outlets etc. in the proximity, there is a greater potential for economic activities and employment opportunities in the local area.</p>		
<p><u>Environmental Impact</u></p> <p>1. Some Tung Chung residents are concerned about the visual aspect. In response to public views, we</p>	<p><u>Environmental Impact</u></p> <p>1. Option SSW is extremely close to nearby villages. The shortest distance is 20m. Such a close distance with HKBCF would result</p>	<p><u>Environmental Impact</u></p> <p>1. Chinese White Dolphins – The waters on the western side of the Airport has long been recognised as an active area of</p>

North-east waters off the Airport Island (NECLK) option	San Shek Wan (SSW) option	Western waters off the Airport Island (WCLK) option
<p>have replaced the section of elevated road near Tung Chung by a combination of tunnel and at-grade road. As regards the HKBCF, it is at a distance of 2 km away from Tung Chung (distance being roughly equivalent to that between Central and Jordan) and its buildings are generally low-rise. (The largest building at HKBCF is the passenger clearance building, which is similar in height to the existing airport terminal buildings.) Visual impact on views from Tung Chung should be minimal.</p> <p>2. Some Tung Chung residents are concerned about the environmental aspect, which will be dealt with under the EIA in accordance with the EIAO. The EIA has been substantially completed. The substantially assessed results show that Option NECLK will meet the requirements under the EIAO, including the criteria on air-</p>	<p>in non-compliance in air-quality and noise criteria stipulated under the EIA Ordinance (EIAO);</p> <p>2. Option SSW involves a large scale of hillside cutting (~15 million m³), as well as substantial damage to natural woodland (~35ha/over 20,000 trees) and natural shoreline (~2km), resulting in irreversible damage to the natural environment in San Shek Wan.</p>	<p>Chinese White Dolphins. They are densely populated at Sha Chau/ Lung Kwu Chau and at the west of Lantau Island. Also vital is a dolphin movement corridor between the Sha Chau/ Lung Kwu Chau and West of Lantau Island. An artificial island located in this movement corridor will cause serious impact on the Chinese white dolphins.</p>

North-east waters off the Airport Island (NECLK) option	San Shek Wan (SSW) option	Western waters off the Airport Island (WCLK) option
<p>quality and noise-levels. It should also be noted that the assessed results have taken into account not only the HKBCF, the HKLR and the TM-CLKL, but also the cumulative impacts due to other sources. The finalised EIA study report will be submitted to the statutory authority under the EIAO. Subject to the approval by the Director of Environmental Protection, we anticipate that it will be ready for public inspection in August 2009.</p>		
<p><u>Reclamation</u></p> <ol style="list-style-type: none"> Owing to the merging of the HKBCF with Tuen Mun-Chek Lap Kok Link (TM-CLKL) landfall in terms of reclamation, the seawall will be reduced by approximately 1.8 km and dredging reduced by approximately 5 million m³. Reclamation will be required on the eastern side of the Airport 	<p><u>Reclamation</u></p> <ol style="list-style-type: none"> The reclamation cannot be merged with that of the TM-CLKL landfall. This will result in reclamation not only having to be carried out at San Shek Wan for HKBCF, but also east of Airport Island for the TM-CLKL landfall concurrently. 	<p><u>Reclamation</u></p> <ol style="list-style-type: none"> Under this option, the reclamation cannot be merged with that of TM-CLKL landfall. That means reclamation not only has to be carried out at the west of Airport Island, but at the east as well for TM-CLKL landfall concurrently.

North-east waters off the Airport Island (NECLK) option	San Shek Wan (SSW) option	Western waters off the Airport Island (WCLK) option
<p>Island only (unlike the other two options, the Option WCLK and Option SSW, which will involve reclamation not only on western side of the Airport Island but also on eastern side of the Airport Island in order to provide the TMCLKL landfall).</p>		
		<p><u>Hydraulics & Navigation Safety</u></p> <ol style="list-style-type: none"> 1. Main flowpath of Pearl River Delta (PRD) – HZMB feasibility study report assessed that the water resistance ratio should be limited to 10% to minimize the flow and flood discharge impact. Given that an artificial island will be located at the main flowpath of the PRD under this option, the water resistant ratio will be higher than 10%, thus imposing severe impact on the Pearl River flowpath and flood-discharge capacity. 2. Besides, if HKBCF is built near the HKSAR boundary, marine navigation will be affected which may affect navigation safety.

**834TH – Hong Kong–Zhuhai–Macao Bridge
Hong Kong Boundary Crossing Facilities**

Breakdown of estimates for consultants' fees

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
Consultants' staff costs						
(a)	Review of preliminary design	Professional	184	38	2.0	22.3
		Technical	554	14	2.0	22.0
(b)	Detailed design	Professional	1 110	38	2.0	134.4
		Technical	3 864	14	2.0	153.3
(c)	Preparation of tender documents and assessment of tenders	Professional	417	38	2.0	50.5
		Technical	1 513	14	2.0	60.0
Total consultants' staff costs						442.5

* MPS = Master Pay Scale

Note

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. (At 1 April 2009, MPS pt. 38 = \$60,535 per month and MPS pt. 14 = \$19,835 per month).
2. The figures given above are based on estimates prepared by the Director of Highways. We will know the actual man-months and fees only after we have selected the consultants through the usual competitive lump-sum fee bid system.