

International Business Committee

Hong Kong - Zhuhai - Macao Bridge

1. Purpose

This paper informs the International Business Committee of the development and latest progress on the implementation of the Hong Kong – Zhuhai - Macao Bridge (HZMB) project.

2. Need for the HZMB project

When compared to the link with other parts of the Pearl River Delta (PRD), transport link between Hong Kong and the Western PRD has been weak relying primarily on waterborne traffic. A study on “Transport Linkage between Hong Kong and Pearl River West” jointly commissioned by the National Development and Reform Commission and the Hong Kong Special Administrative Region (HKSAR) Government concluded in 2003 that the construction of a land transport link connecting Hong Kong and Pearl River West was of utmost urgency, and recommended to construct the HZMB.

The HZMB would significantly reduce transportation costs and time for travellers and goods across the PRD. Upon its completion, the HZMB would complete the loop of high speed road linking the major cities in the PRD – including Zhuhai, Guangzhou, Dongguan as well as the western region of Guangdong, Guangxi, Hainan and the south-western region of the Mainland (see **Figure 1**).

The HZMB would enhance the attractiveness of the Western PRD to external investment, which is conducive to the enhancement of its socio-economic development. Hong Kong will also benefit from this new economic hinterland, with its vast human and land resources. The project will encourage closer economic integration between Hong Kong and the PRD, and strengthen Hong Kong’s position as a logistics, financial and tourism centre.

3 Scope of the HZMB Project

The HZMB project consists of three sections (see **Figure 2**). The western section comprises a 13 km link road within Zhuhai and the Zhuhai-Macao Boundary Crossing Facilities (ZMBCF), which is a 216-hactare reclamation off Gongbei of Zhuhai. The dual 3-lane Zhuhai Link Road will connect ZMBCF to the inland area of Zhuhai. The middle section is the HZMB Main Bridge which will be a 30 km long dual 3-lane carriageway in the form of bridge-cum-tunnel structure, comprising about 23 km sea viaduct and 7 km immersed tunnel. The 7 km tunnel will be one of the longest deep water immersed tunnels in the world.

The eastern section of the HZMB project will be within the HKSAR boundary and comprises the 12 km dual 3-lane Hong Kong Link Road (HKLR) connecting the HZMB Main Bridge to the Hong Kong Boundary Crossing Facilities (HKBCF). A tunnel section of HKLR will pass under the Scenic Hill and Airport Railway, and a section of at-grade-road will run along the eastern coast of Airport Island to the HKBCF (see **Figure 3**).

The HKBCF is to be built by reclamation of about 130 hectare at the north-eastern waters off the Hong Kong International Airport (HKIA). With its proximity to the HKIA, the HKBCF will serve as a strategic multi-modal transportation hub. Other than typical reclamation, the works at the HKBCF will include construction of cargo and passenger related facilities, Government buildings, public transport interchange, transport and electrical & mechanical facilities, environmental measures, open road tolling system etc. (**Figure 4**).

In connection with the HZMB project, the Tuen Mun - Chek Lap Kok Link (TM-CLKL) together with the Tuen Mun Western Bypass (TMWB) are also proposed to complete a regional transportation network between Hong Kong, Macao, Shenzhen and Zhuhai (**Figure 5**). The TM-CLKL will be a 9 km dual 2-lane carriageway, providing a new road link to meet the anticipated traffic demand between Northwest New Territories (NWNT) and North Lantau via HKBCF. At the same time, it will provide an alternative access to the HKIA independent of the existing North Lantau Highway. The proposed works include the construction of an

approximately 5 km long sub-sea tunnel across the Urmston Road navigation channel, with the deepest invert level at about 50 m below sea surface. Instead of using the traditional Immersed Tube tunnel method, the sub-sea tunnel will be built by two 14 m diameter Tunnel Boring Machines (TBM). The tunnel will be the first sub-sea highway tunnel in Hong Kong to be built by TBM at such a depth and hence a major challenge for the construction industry. The TM-CLKL Southern Connection, in the form of a sea viaduct, will provide a direct connection between the HKBCF and North Lantau. The total construction cost of the HKLR, HKBCF, TM-CLKL is estimated to about 40 billion Hong Kong dollar.

4. Financing the HZMB project

While the Mainland Government, Macao SAR Government and HKSAR Government will be responsible for the funding of the respective BCF and link roads within their territory, the HZMB Main Bridge would be constructed jointly by the three governments. The estimated project cost for the HZMB Main Bridge is about 38 billion RMB. The Mainland, HKSAR and Macao SAR governments will altogether contribute RMB15.73 billion, which is about 42% of the project cost of the Main Bridge. The remaining 58% will be financed by bank loans. In terms of management, the three governments will form a project management board as an independent legal entity for the implementation, operation and maintenance of the HZMB Main Bridge.

This financing model has a major advantage over the “Build-Operate-Transfer” model as the three governments would have better control over the future tolling of the HZMB. A competitive toll can attract more traffic to use the HZMB and hence enable better economic development of the region.

5. Programme of HZMB Project

The construction of the HZMB Main Bridge is planned to commence in December 2009 with a view to completion in 2015/2016. The preparatory work for the related projects within Hong Kong, i.e. HKLR, HKBCF and TM-CLKL, are also at an advanced stage and the

construction of which will commence in phases starting from mid-2010.

6. Environmental Consideration

Comprehensive Environmental Impact Assessments (EIA) have been conducted for the HKBCF, HKLR and TM-CLKL projects, all in accordance with the requirements under the EIA Ordinance (EIAO).

Environmental consideration has been one of the major factors in the design of the HZMB project. The location of the HKBCF, which is about 2 km away from Tung Chung town, has been carefully selected to minimize the visual, air and noise impacts on the nearby sensitive receivers. The location also avoids all recognized sites of conservation importance and is within waters where sightings of the Chinese White Dolphins are less frequent. For the HKLR, a tunnel under the Scenic Hill and a section of at-grade-road are incorporated in order to shift the carriageway further away from Tung Chung. To further enhance conservation, we will seek to designate the Brothers Islands as a marine park in accordance with the Marine Parks Ordinance upon completion of the projects.

To make the HKBCF an innovative and environmentally-friendly transportation hub in the world, an open international design competition will be held, with focus on architectural design, environmental-friendliness, user convenience and comfort, energy efficiency and the use advance technology.

7. Business Opportunities from Construction

The construction industry will no doubt benefit from the HZMB and the related projects. A great variety of works – including construction of highway, bridge, tunnel and artificial island – together with related materials supply will be launched under the projects in a massive scale in the coming one to two years. The implementation of the HKBCF, HKLR, TM-CLKL and TMWB are estimated to create about 18,000 jobs during the construction stage. Along with the construction activities, the servicing, financing and insurance sectors will also benefit. For instance, some international financial and legal consultants based in Hong Kong

have been engaged to provide services for this iconic and world-class project. It also can be expected that many local and international construction firms are interested in taking part in this project during construction stage. In this regard, international firms with qualifications and experience recognized by the Mainland authorities would be able to tender for these construction or servicing contracts either individually or via joint venture with Mainland firms.

8. Conclusion

The HZMB is a challenging sea-crossing road infrastructure project that will certainly capture the world's attention. The mega size of this project will create numerous business and job opportunities. The HZMB project links up three administrative zones with different legal systems, design standards, construction practices and maintenance requirements. Its completion would not only signify the success of the "one country, two systems" policy but would also accelerate the socio-economic integration of people from the three places, providing impetus for the regional economy and enhancing competitiveness of the region.

Highways Department
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Figure 2 Layout of the Hong Kong – Zhuhai - Macao Bridge



Figure 3 Photomontage of the Hong Kong Link Road



Figure 4 Photomontage of the Hong Kong Boundary Crossing Facilities



Figure 5 Layout of the Hong Kong – Shenzhen – Zhuhai Corridor