

## **For Information**

### **Legislative Council Panel on Transport**

#### **Hong Kong – Zhuhai – Macao Bridge**

### **Purpose**

This paper provides Members with supplementary information on the three categories of alignment options for the Hong Kong – Zhuhai – Macao Bridge (HZMB).

### **Background**

2. At the meeting of the Panel on 27 May 2005, we updated Members on the progress of the advance work for the HZMB and the North Lantau Highway Connection. At the request of the Panel, we agreed to provide additional information on the three categories of alignment options for the HZMB, namely Northern Alignment, Southern Alignment and Extreme Southern Alignments (see Annex).

### **Alignment Options for HZMB**

3. The Northern Alignment starts from the east bank landing point of San Shek Wan at Northwest Lantau, crosses the Pearl River Estuary in a bridge-cum-tunnel form to connect to an artificial island near A Pérola of Macao and Gongbei of Zhuhai. The total length of the main structure on the sea is about 35 km, 6 km of which takes the form of a sea tunnel.

4. The Southern Alignment starts from the east bank landing point of San Shek Wan at Northwest Lantau. It runs along the shoreline to Tai O where the airport height restriction is less stringent before crossing the Pearl River Estuary in the form of a full bridge to connect to an artificial island near A Pérola of Macao and Gongbei of Zhuhai. The total length of the main bridge on the sea is about 36 km.

5. For the Extreme Southern Alignment, Hengqing is the landing point on the west bank. The bridge alignment crosses the Pearl River Estuary via the two islands of Niu Tou Dao and San Jiao Dao. From the south of Lantau, it either runs along the western Lantau shoreline to land at San Shek Wan or passes through the Lantau Island in the form of a tunnel towards the North Lantau Highway. The total length of the main structure on the sea is about 46 km for the former option, and 40 km for the latter. In both options, 8 km of the alignment takes the form of a sea tunnel at the eastern main navigation channel. For the tunnel through Lantau Island, the connecting road linking Tung Wan to Tung Chung Bay of Lantau Island is about 9 km, 7 km of which takes the form of a tunnel.

### **Characteristics of the Alignment Options**

6. The Northern Alignment is the smoothest and shortest among the three options. Adopting this bridge-cum-tunnel option will not pose any air draught constraints on ships accessing Shenzhen and Guangzhou ports, and will thus provide more flexibility for the development of the shipping industry in the Pearl River Delta. Within Hong Kong, the Northern Alignment will also cause the least disturbance to the natural shoreline of Lantau.

7. The Southern Alignment requires a full bridge structure<sup>1</sup>. Where it comes near the Hong Kong International Airport, the maximum height of the bridge is constrained by the airport height restrictions. This restricted height of the bridge will become a constraint for large ships and petroleum drilling rigs entering or departing from ports or shipyards in the upper Pearl River Estuary via the main navigation channels in the eastern side of the Pearl River Estuary, including Lingding Channel, Tonggu Navigation Channel, Dahao Shuidao and Rongshutou Channel. This will adversely affect the operation and development of ports and shipyards in Guangdong. Furthermore, the construction of huge bridge piers at the main navigation channels will also affect navigation safety. Within Hong Kong, the alignment running along the existing natural shoreline from Tai O to San Shek Wan will cause significant

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<sup>1</sup> If the Southern Alignment is to take the form of a bridge-cum-tunnel, the eastern tunnel artificial island would have to be located in the waters of Hong Kong, affecting the north-south navigation channel at the western waters of Lantau Island.

visual impact on the natural coast of West Lantau. In addition, this option will be very close to a proposed marine park at Fan Lau in Southwest Lantau as well as waters which is more frequented by Chinese White Dolphins within Hong Kong's boundary. It will give rise to very significant problems for conserving the nature and ecology of Lantau.

8. The Extreme Southern Alignment is the longest among the three options. It is thus the least attractive from the transport angle and is the most expensive in terms of capital, maintenance and operation costs. In addition, a relatively longer tunnel is needed at the eastern main navigation channels, where the conditions for construction is very complex with deep water and large wave action, thus creating difficulties and increasing the risk for the project. Within Hong Kong, the alignment runs through the proposed marine park at Fan Lau in Southwest Lantau, waters more frequented by Chinese White Dolphins within Hong Kong's boundary and the existing country park on Lantau Island. It will lead to significant visual impact on the natural shoreline of West Lantau and give rise to very serious problems for conserving the nature and ecology of Lantau.

### **Determining the HZMB Alignment**

9. Since the HZMB is a strategic road link connecting Hong Kong with Zhuhai and Macao, its alignment has to be agreed by the three governments. The National Development and Reform Commission organized an Expert Panel Meeting on the HZMB Alignment in Zhuhai in early April this year. The Expert Panel, consisting of experts from the three places, took into account various considerations such as air draught requirements for navigation, airport height restrictions, development needs of the ports in Pearl River Estuary, the use of the Pearl River Estuary waters, environmental protection and hydrology. The Expert Panel unanimously recommended the Northern bridge-cum-tunnel alignment option.

