

For Information

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## **Legislative Council Panel on Transport**

### **The Hong Kong – Zhuhai – Macao Bridge (“the Bridge”)**

#### **PURPOSE**

This paper provides Members with information on the vehicular flow projection of the Bridge and its traffic impact on the existing road network.

#### **BACKGROUND**

2. At the meeting of the Legislative Council Panel on Transport held on 24 October 2003, we briefed Members on the justification for the Bridge and the location of its landing point in Northwest Lantau. Members requested further supplementary information on the basic assumptions for the traffic forecasts of the Bridge, as well as the titles of major studies that the Administration has made reference to when coming up with the relevant traffic forecasts.

#### **VEHICULAR FLOW PROJECTION**

3. According to the forecasts in the Study on the “Transport Linkage between Hong Kong and Pearl River West”, the annual passenger flow and freight demand of the Bridge in 2010 is 33 – 41 million passengers, 1.7 – 2.6 million TEUs, and 1.1 – 1.9 million tonnes break-bulk cargo.

4. The Study has not provided a translation of the above passenger flow and freight demand flow into vehicular traffic. A lot of factors would affect the vehicular flow, including for example the tolling structure, the modal split, and the vehicle restriction policy, all of which are uncertain at this stage.

5. At members' request, we have attempted at projecting the vehicular flow for reference purpose. It is estimated that there will be a vehicular flow of 12 000 – 16 000 vehicles per day<sup>(1)</sup> in 2010. We set out below the assumptions in our computation and in the footnote the relevant documents we have made reference to: -

(a) Passenger

We assume that 10%<sup>(2)</sup> of the passengers would take private cars, with an occupancy rate of 2 persons per car<sup>(3)</sup>, and the rest will take coaches with an occupancy rate of 30<sup>(4)</sup>. We adopt the annualisation factor of 397.8<sup>(5)</sup>

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(1) The 'day' stands for normal weekdays from Monday to Friday.

(2) The proportion of cross-boundary passengers by private car is 3% in 2002. According to "Travel Characteristics Survey 2002" conducted by Transport Department, HK internal private car share is around 13% in 2002. In postulating a scenario for the Bridge, we have assumed relaxation in the cross boundary private car quota to allow the private car share to rise close to HK internal private car share.

(3) Based on the "2001 Cross Boundary Travel Survey", the observed average no. of passengers carried by each private car is 2, excluding the driver. Under the current quota arrangement, most of the cross boundary private cars are company owned with designated drivers. With possible relaxation in the quota system, the passenger will likely assume the driver duty.

(4) This average occupancy rate has been adopted in the projection exercise since 1998. It was first derived based on survey information. Further checking with latest statistics, the occupancy rates at Sha Tau Kok, Man Kam To and Lok Ma Chau are about 22, 26 and 36. Overall average is around 33 but distorted by the high occupancy of yellow bus at Lok Ma Chau. So, we have adopted 30 in converting coach passengers into coach vehicle trips.

(5) These two annualisation factors are derived based on 2001 statistical records. The factor is obtained by dividing the annual flow by the average typical weekday flow. Since passenger flows at weekends and on public holidays are generally higher than that on a typical weekday, the passenger annualisation factor is greater than 365. On the contrary, goods vehicle flows at weekends and on public holidays are lower, therefore the goods vehicle annualisation factor is less than 365.

(b) Cargo

We adopt an annualisation factor of 330<sup>(5)</sup>. For breakbulk cargo, we assume an average load factor of 2.66 tonnes/vehicle<sup>(6)</sup>. For containerized cargo, we assume an average load factor of 3.27 tonnes/TEU<sup>(6)</sup>.

Potential Traffic Impact

6. There is now ample spare capacity on both the North Lantau Highway and Lantau Link. In 2002, the peak hour traffic volume on these two roads is 1800 veh/bound with a v/c ratio of 0.4<sup>(7)</sup>. The annual average daily traffic on these roads is about 41,000 veh/day.

7. Based on existing information and preliminary analysis, we estimate that the peak hour traffic volume on the two roads will increase to 4,700 veh/bound with a v/c ratio of 1.0<sup>(7)</sup> in 2011 assuming that there will be an additional flow of 16,000 vehicles per day brought about by the bridge. Therefore, we conclude that our receiving road network including North Lantau Highway and Lantau Link can adequately handle this amount of traffic from the Bridge and the resultant traffic will flow smoothly. A more detailed traffic impact assessment will be carried out in the proposed investigation and preliminary design study to examine both the short and long term impact of the Bridge.

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(6) The two average load factors are derived based on 2001 cross boundary cargo and vehicle flow statistics. They are obtained by deriving the total tonnage of cargo carried by respective vehicles by the total number of respective vehicle trips.

(7) V/c (volume/capacity) ratio is an indicator reflecting the performance of a road. A v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A v/c ratio above 1.0 indicates the onset of congestion; above 1.2 indicates more serious congestion with further increase in traffic. Speed and freedom to manoeuvre will become increasingly restricted and drivers would experience a poor level of comfort and convenience.

Environment, Transport and Works Bureau

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