

For Discussion
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Panel on Planning, Lands and Works
Panel on Environmental Affairs

Joint Meeting on 27 November 2003

Traffic and Transport Justification for the
Central – Wan Chai Bypass

Purpose

This paper presents the traffic and transport justifications for the Central – Wan Chai Bypass (CWB) and the at-grade roads within the Central Reclamation Phase III (CRIII).

The CWB

Background

2. The CWB will be a strategic trunk road located at the northern shore of Hong Kong Island linking Rumsey Street Flyover with the Island Eastern Corridor via the Island Eastern Corridor Link (IECL) (plan at **Annex A**). The CWB and IECL will form a parallel and complementary route to the existing Connaught Road Central/Harcourt Road/Gloucester Road corridor (the Corridor) so as to relieve its traffic loading. The CWB will have intermediate access points in Wan Chai near the Hong Kong Convention and Exhibition Centre at which the eastbound and westbound traffic of the CWB can exit and the Wan Chai traffic can join the CWB heading toward Island Eastern Corridor.

3. In 1987, the Territory Development Department (TDD) commissioned the “Central and Wan Chai Reclamation Feasibility Study” (CWRFS). The CWRFS recommended, amongst other, reclaiming the waterfront from Sheung Wan to Causeway Bay to provide land for the CWB and other major transport infrastructure to improve the traffic condition along

the Corridor and in the Central Business District (CBD).

4. The Second Comprehensive Transport Study¹ (CTS-2), completed in 1989, reconfirmed the need for the CWB. The CTS-2 predicted that, without the CWB, critical sections of the Corridor would be overloaded beyond their practical capacities during the peak hours by 2001, resulting in long traffic queues along the Corridor and the local roads in the Central and Wan Chai areas. The need for the CWB was reinforced further in the Third Comprehensive Transport Study (CTS-3) completed in 1999.

5. In a recent rerun of the CTS-3 transport model completed in 2003, the results indicated that the demand for the CWB remained firm, despite the changes in land use planning assumptions and the reduced population projection of the territory. The CTS-3 model predicted that the traffic volume during the peak hours in 2011 on critical sections of the Corridor will exceed their capacities by 30% if the CWB is not provided in time.

Traffic Justifications

6. The Corridor is operating beyond its capacity currently. Congestion along the Corridor is not limited to the typical morning and evening peak hours. Regular traffic congestion can be observed throughout the weekdays between 8 a.m. and 7 p.m.. Eastbound traffic heading to the CBD often queues back to the Western Harbour Tunnel approach along the Rumsey Street Flyover. Traffic westbound to the CBD often tails back to the Wan Chai Sports Ground along Gloucester Road. In the morning peak hour between 8 a.m. to 9 a.m., drivers need more than five minutes to pass through the 0.7km section of eastbound Connaught Road Central (CRC) between Rumsey Street and Pedder Street. This represents a travelling speed of just over 7 km/hr

¹ Comprehensive Transport Studies (CTS) aim to provide a framework for which Government can develop a balanced transport strategy to facilitate the mobility of people and goods of Hong Kong in an environmentally sustainable manner. The CTS model is based on assumptions on land use planning, economic growth, vehicle fleet size and the road network information. The model is calibrated using field traffic survey data. It is used to forecast future demands on the transport system of Hong Kong. The CTS model simulates both passenger and goods vehicle movements in Hong Kong and identifies constraints in the road network system.

whereas the allowable travelling speed is 50 km/hr. It is expected that travelling along the 4-km Corridor will take about 45 minutes at a speed of about 5 km/hr in 2011 without the CWB. The stagnant traffic on the Corridor will have a spill over effect leading to congestion in the neighbouring roads in Central and Wan Chai. With the completion of the CWB and IECL, traffic along the critical sections of the Corridor will be retained to within the capacity of the road and traffic congestion can be relieved. The predicted volume to capacity (v/c) ratio² at various locations are summarised below :

Location	Without CWB and P2 ³		With CWB and P2	
	2011	2016	2011	2016
Connaught Road Central	1.3	1.3	0.8	0.9
Harcourt Road	1.3	1.3	0.8	0.9
Gloucester Road	1.3	1.3	0.9	0.9
CWB	-	-	0.7	0.7

7. Other east-west secondary corridors, such as Hennessy Road and Queensway will not be able to help relieving the congestion problem along the main Corridor as they will also be heavily congested. This is because their capacity will be constrained by the traffic signals and kerbside loading/unloading activities of buses, taxis and goods vehicles.

Possibility for Alternative Alignments for the CWB

8. The following constraints on the alignment for the CWB have been identified :

- (a) the Rumsey Street Flyover (the western end of the CWB) where provision has already been built for the future extension;
- (b) the existing developments and on-going developments including

² Volume to capacity (v/c) ratio is an indicator which reflects 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; that above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic. 1.3 may be considered as a limiting v/c ratio. The road cannot physically handle a greater volume of traffic and as demand increases beyond this level, longer and longer queues would result.

³ See paragraph 12 below on Road P2.

Harbour Building, Exchange Square, One and Two International Finance Centre, Four Seasons Hotel, Wan Chai Towers and Central Plaza;

- (c) existing Roads including Connaught Road Central, Harcourt Road, Gloucester Road and Man Cheung Street;
- (d) existing underground structures including existing MTR Tsuen Wan Line and Airport Railway;
- (e) the existing MTR Cross Harbour Tunnel (Tsuen Wan Line) including the joints of the tunnel tube;
- (f) the Hong Kong Convention and Exhibition Centre, its Extension and the Atrium Link between them;
- (g) the Cross Harbour Tunnel in Causeway Bay; and
- (h) the existing Island Eastern Corridor (the eastern end of the CWB).

9. Due to these control points, the horizontal alignment of the CWB cannot be shifted further southward/landward.

10. Due to the adverse environmental impacts arising from the pollutants and noise generated by the traffic, it is also not viable to realign the CWB to the developed CBD in the form of at-grade or elevated roads. Furthermore, the at-grade or elevated options will require either the demolition of buildings or interference with the road networks which are already overloaded.

Distributor Roads in the CRIII

11. At present, traffic generated from the completed Central Reclamation areas north of Exchange Square has to route through some already congested roads and junctions in Central. Traffic along Man Yiu Street and Connaught Place, which is the main eastbound outlet, has to wait for several traffic light cycles before joining CRC. Traffic along this main eastbound

outlet is forecast to double its current volume due to the occupation of the International Finance Centre (IFC) Phase 2 and its associated hotel development by year 2006. As a result, long traffic queues are anticipated along the full carriageway width along Connaught Place/Man Yiu Street/Man Cheung Street around the Airport Railway Station and IFC Phases 1 & 2. The problem will be exacerbated by the continual growth of the large volume of eastbound traffic along CRC. Completion of CWB will not remove this congestion problem as CRC is predicted to remain busy for handling local traffic by 2011. A gridlock in the area north of CRC is anticipated as traffic will not be able to exit onto CRC, thus affecting seriously the operation of the Exchange Square, Airport Railway Station, IFC Phases 1 & 2 and the ferry piers. The gridlock will in turn cause traffic to pile up along routes carrying incoming traffic to the new Central Reclamation Areas including Pedder Street and Queen's Road Central.

12. To cope with the growing traffic within the completed Central Reclamation Phases 1 and 2, we need to provide at-grade roads within CRIII which comprise the primary east-west distributor Road P2 and the associated local distributor roads in the new reclamation area (location plan at **Annex B**). The Road P2 road network will also provide slip roads for linking the intermediate access points of the CWB in Wan Chai. The new roads will cater for the direct traffic between Central Reclamation areas and Wan Chai North, without having to route through the already very congested Harcourt Road and Gloucester Road as well as the existing local distributor roads in the Central and Wan Chai districts.

Alternative Measures to Alleviate Traffic Congestion Along the Corridor

Traffic Restraint and Traffic Management Measures

13. The CBD traffic studies commissioned by the Transport Department (TD) in 2000 and 2003 identified a number of locations in the CBD which will experience regularly a high level of traffic congestion at varying times throughout the day and also during certain days of the week. At some locations, traffic congestion is due to physical constraints in the built up areas with no scope for further road widening, while at other locations the traffic congestion will be relieved with the completion of the future new roads within the new reclamation areas.

14. The studies suggested various basic traffic restraint measures as well as a series of generalised short and medium term traffic management measures as outlined in **Annex C**. Implementation of these measures however needs to be considered in the context of developing a comprehensive transport system management strategy for the CBD as well as in the framework of broader territory-wide policies and plans. That said, TD will implement the bus priority measures; traffic management and road improvement schemes progressively. A list of schemes that have already been completed and those to be implemented in the near future is set out at **Annex D**.

15. It should be emphasized that the above short and medium terms traffic management schemes are designed to relieve existing congestion and maximise the capacity of the existing roads and junctions. According to TD's traffic forecast, further growth in traffic flows in the CBD will overload the road network by 2006, even with all the above measures implemented. It is therefore necessary to construct the CWB and the Road P2 roads network in the CRIII.

Electronic Road Pricing (ERP)

16. A Feasibility Study on ERP (the Study) was completed in April 2001 to examine the practicability of implementing an ERP system in Hong Kong and the need for such a system to meet transport objectives. While the Study concluded that the implementation of an ERP system in Hong Kong is feasible from the technical point of view, it also considered that given that peak hour travel speed in urban areas is forecast to remain above 20 km/hour, drastic restraint measures such as ERP were not warranted on traffic management grounds before 2006 for Hong Kong Island and 2011 for Kowloon at the earliest if the growth of the private vehicle fleet is no more than 3% per year. The Study also pointed out that ERP could only work where there was a high level of consensus in the community. After considering all the relevant factors with reference to the above conclusions, the Administration decided that ERP should not be pursued at that time.

17. As part of our on-going effort to explore measures to alleviate congestion, we are now examining further a range of measures including the possible option of ERP. Overseas experience shows that the availability of a

reasonable alternative route is key to obtaining community support for the implementation of any such scheme. The magnitude of the forecast growth in traffic also demands infrastructure improvement in addition to traffic management measures. The provision of an alternative east-west corridor in the form of CWB is hence crucial in any proposal to address the congestion of CBD.

Advice Sought

18. Members are invited to note the content in this paper.

Environment, Transport and Works Bureau
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Central Business District Traffic Studies

Suggested Traffic Restraint Measures

- (a) adjusting parking fees at public car parks;
- (b) restricting vehicles with odd/even registration numbers on alternate days;
- (c) area licensing scheme;
- (d) car pooling;
- (e) taxi surcharge; and
- (f) charging and/or prohibition on goods vehicles.

Suggested Short to Medium Term Traffic Management Proposals

- (a) additional urban clearway restrictions;
- (b) traffic improvements along major corridors;
- (c) road and junction improvement schemes; and
- (d) bus priority measures.

**Implementation of Schemes to Relieve Traffic Congestion
in the Central Business District**

Schemes Completed

- (a) changes to lane demarcation on Ice House Street, 2-way re-routing on Ice House Street between Chater Road and Connaught Road Central;
- (b) lengthening the weaving section on Connaught Road Central eastbound near City Hall;
- (c) closing the U-turn loop at the northern end of Cotton Tree Drive at-grade and provision of an alternative right turning facility on Queensway eastbound underneath Cotton Tree Drive Flyover;
- (d) widening the carriageway for right-turn so that a bus and a car can turn simultaneously from Queen's Road Central westbound into Pedder Street; and
- (e) imposition of urban clearway restrictions on the western side of Pedder Street. Provision of yellow hatched markings on the eastern side of Pedder Street.

Schemes to be Implemented in the Near Future

- (a) junction improvement works at the junction of Man Yiu Street and Man Cheung Street;
- (b) proposed exit from Jubilee Street Underpass to Rumsey Street Flyover up-ramp west bound;
- (c) junction improvement works at the junction of Cotton Tree Drive and Harcourt Road;

- (d) junction improvement works at the junction of Connaught Road Central and Pedder Street;
- (e) signalisation of the junction of Man Kat Street and Rumsey Street Flyover down-ramp eastbound;
- (f) traffic improvement scheme along Chater Street and Murray Street;
- (g) traffic improvement scheme at Morrison Street;
- (h) construction of a temporary road at Edinburgh Place;
- (i) junction improvement works at the junction of Connaught Place, Man Yiu Street and Harbour View Street;
- (j) traffic management scheme for Central Police Station, Magistracy and Victoria Prison Redevelopment;
- (k) junction improvement works at the junction of Connaught Road Central and Gilman Street; and
- (l) gyratory scheme at Lockhart Road.