

## APPENDIX K

### Endorsement of Traffic Data



## *Introduction*

This note is to summarise the methodology of producing the traffic forecast for Environmental Impact Assessment (EIA) Study for the New World First Bus Permanent Depot in Chai Wan Cargo Handling Area.

The operational hours of the bus depot will mainly at late evening and early morning. Thus the EIA was mainly to assess the impacts of the bus depot during these time periods. The bus depot will be completed by 2001. It was expected that the traffic flows in the vicinity of the bus depot would strictly increase from 2001 to 2016, because there will be no planned new infrastructure that would take away the traffic. As a result, the 2016 would be the worst case scenario within the 15 years period after the completion of the new depot and hence the 2016 late evening and early morning peak hour traffic flows were produced for EIA.

The area of influence for the EIA study covered two types of roads. One was strategic road i.e. Island Eastern Corridor (IEC). The other one was local roads e.g. Shing Tai Road, Wing Tai Road and Chong Fu Road. The traffic forecast for these types of roads were based on different methodology as described in the following sections.

## *Strategic Road*

The 2016 normal AM and PM peak hour flows were extracted from a MVA in-house strategic four-stage model, MVCTS which has been used in many major government projects e.g. RDS-2, NENT, NWNT and Route 10 etc., and has been accepted by government. The road network assumptions, rail network assumptions, and population and employment planning data are summarised in attached Tables 1 to 3.

To estimate the late evening and early morning peak hour flows, the hourly variation pattern of the core station on IEC as stipulated in Annual Traffic Census was applied to the normal AM and PM peak hour model flows.

## *Local Road*

Traffic survey had been carried out during the late evening and early morning period to obtain the existing traffic flows and pattern. The details of the survey as well as the results had been illustrated in our TIA report.

As mentioned in our TIA report, the new developments in the vicinity of the Bus Depot will not generate significant traffic during late evening and early morning periods. Thus, using growth factor method to estimate the traffic flows for the local roads during late evening and early morning periods, should be acceptable.

The growth factors were determined by referring to the growth of daily traffic generated/attraction by the CTS zone no. 34 which represents the study area. The daily traffic of CTS zone no. 34 extracted from the MVCTS model are summarised in attached Table 4.

Based on Table 4, the growth rates of the traffic zone no. 34 from 1996 to 2016 were calculated. 2016 traffic flows for the local roads during late evening and early morning periods were then produced by applying the growth rates to the observed traffic flows.

### Bus Flows

The traffic forecast for the bus flows was based on the information from the client, New World First Bus.

Table 1 Highway Network Assumptions

2006 / 2007 <sup>(1)</sup>	Configuration
<u>Access to Airport/Port Facilities and Related Development</u>	
• Route 9 (Tsing Yi to Cheung Sha Wan)	D3
• Roads P2 and P3 on Lantau Island	D2
• Tuen Mun Foothills Bypass	D2
• Access Road to CT9 (To be completed in stages between 2001 - 2003)	D2
• Lung Mun Road Upgrading	D2
• Mui Wo to Tai Ho Link Road	S2/D2
• Chok Ko Wan Link Road	D3
• Tseung Kwan O Western Coast Road	D4
• Route 10 (North Lantau to Yuen Long Highway) <sup>(2)</sup>	D3
<u>Hong Kong Island</u>	
• Route 7 (Sandy Bay to Aberdeen) <sup>(3)</sup>	D3
• Roads P1, P2 on Central and Wan Chai Reclamation	D2 / D3
• Extending Pedder Street, Fenwick Street and Fleming Road onto Central and Wanchai Reclamation Phase I	D2
• Justice Drive Extension Northern	S2
• Justice Drive Extension Southern	S4
<u>Kowloon</u>	
• Central Kowloon Route	D2
• Some District Roads in SE Kowloon Reclamation	D2
• West Kowloon Reclamation Road P1 Southbound (between Road D4 and Road D7)	D2/D3/D4
• Some District Roads	D3/D2
• Hung Hom Bypass	D2
• Princess Margaret Road Link	D2
• T2 (Kai Tak Connector)	
• Connection of T2 and WCR to EHC	
• Choi Hung Road Widening	
<u>Tsuen Wan/Kwai Tsing</u>	
• Texaco Road Improvement - Phase III	D2
• Route 5 Extension from Shek Wai Kok to Chai Wan Kok	D2
• Tsing Yi North Coastal Road	D2
• Duplicate Tsing Yi South Bridge	D3
• Tsing Yi Road West Improvements (Junction Improvement)	D2

Table 1 Highway Network Assumptions (Cont'd)

2006 / 2007	Configuration
<u>Northwest New Territories</u>	
• Kam Tin Road Improvement - Stage 1	D2
• Kam Tin Road Improvement - Stage 2 From Kam Tin Bypass to Route Twisk Roundabout	D2
• Lok Ma Chau Boundary Crossing Capacity Improvement (ASD)	-
• Kam Tin Bypass	D2
• Widening of Yuen Long Highway from D2 to D3	D3
• Tin Ha Road Improvement	S2
• Ping Ha Road Improvement (Hang Mei Section)	S2
• Castle Peak Road Improvements from Siu Lam to So Kwun Tan	D2
• Castle Peak Road Improvements from Tsuen Wan Area 2 to Ka Loon Tsuen	D2
• Tuen Mun Road Improvements at Tai Lam Section (eastbound climbing lane)	D4
• Ping Ha Road Improvement (Ha Tsuen section)	S2
• Deep Bay Link*	D3
• Shenzhen Western Corridor*	D3
<u>Northeast New Territories</u>	
• Sha Tin Trunk Road T3	D2
• Widening of Tai Po Road (Shatin Section)	D3
• Widening of T6 Bridge	D3
• Widening of Tate's Cairn Highway	D4
• Sha Tin Road P8 (Final Section)	D2/D3
• Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling (Wo Hop Shek Interchange)	D3/D4
• Widening of Tolo Highway between Island House Interchange and Ma Liu Shui Interchange	D4
<u>Northeast New Territories</u>	
• Sha Tin Trunk Road T7	D2
• Sha Tin Trunk Roads T3/T4	D2/D3
• Route 9 (Cheung Sha Wan to Sha Tin)	D3
• Cross Bay Link in TKO	D2
• Widening of Sai Sha Road from T7 to Kam Ying Road	D2
• Che Kung Miu Road Flyover	D2
• Sha Tau Kok Road Widening (Lung Yeuk Tau to Ping Che)	D2
• Widening Fo Tan Road	D3
• Tai Chung Kiu Road Flyover	S2
• Ting Kok Road Upgrading Stage 1	D2
• Ting Kok Road Upgrading Stage 2	S2
• Dualling of Hiram's Highway (from Clearwater Bay Road to Marina Cove)	D2
• Dualling of Hiram's Highway (from Marina Cove to Sai Kung)	D2
• Sha Tin Northern Bypass	D2
<u>Southwest New Territories</u>	
• Discovery Bay Link connecting to Cheung Tung Road	S2

Table 1 Highway Network Assumptions (Cont'd)

2011	Configuration
<u>Access to Airport/Port Facilities and Related Development</u>	
<ul style="list-style-type: none"> <li>Route 10 (Hong Kong to Lantau Link) <sup>(4)</sup></li> <li>Road P1 on Lantau Island</li> </ul>	D3 D2
<u>Hong Kong Island</u>	
<ul style="list-style-type: none"> <li>Route 7 (Kennedy Town to Sandy Bay)</li> <li>Island Western Corridor</li> <li>Central and Wan Chai Bypass (including IEC link)</li> <li>IEC Improvements (Causeway Bay to North Point)</li> <li>Green Island Reclamation Roads</li> </ul>	D3 D3 D2 / D4 D4
<u>Kowloon</u>	
<ul style="list-style-type: none"> <li>Kowloon Point Reclamation Road D1</li> <li>SE Kowloon Reclamation Remaining District Roads Road T2</li> </ul>	D2 D2 D3
<u>Tsuen Wan/Kwai Tsing</u>	
<ul style="list-style-type: none"> <li>Tsuen Wan Road Upgrading</li> </ul>	D4
<u>Northwest New Territories</u>	
<ul style="list-style-type: none"> <li>Lingdingyang Bridge*</li> <li>Tuen Mun Port Expressway*</li> <li>Tuen Mun Port Southern Bypass*</li> <li>East-West Link*</li> </ul>	D3 D3 D3
<u>Southwest New Territories</u>	
<ul style="list-style-type: none"> <li>P1 Tung Chung to Yam O</li> </ul>	D3
<u>Northeast New Territories</u>	
<ul style="list-style-type: none"> <li>Sai Kung Highway (Sai Sha to Sha Kok Mei)</li> <li>Fanling Bypass</li> <li>Eastern Highway (Southeast Kowloon to Fanling)*</li> </ul>	D2
2016	Configuration
<u>Kowloon</u>	
<ul style="list-style-type: none"> <li>P1 at Kowloon Point</li> <li>T1 (Hung Hom to Tate's Cairn)</li> </ul>	D2 D2

Table 1 Highway Network Assumptions (Cont'd)

2016	Configuration
<u>Northwest New Territories</u>	
<ul style="list-style-type: none"> <li>Widening of Yuen Long Highway from D3 to D4</li> <li>Tuen Mun Western Bypass*</li> <li>East-West Link</li> </ul>	<p>D4</p> <p>D2</p> <p>D3</p>
<u>Harbour Crossings</u>	
<ul style="list-style-type: none"> <li>Fourth Harbour Crossing (SEK to Causeway Bay)</li> </ul>	D3
<u>Northeast New Territories</u>	
<ul style="list-style-type: none"> <li>Eastern Highway (Southeast Kowloon to Fanling)</li> </ul>	D3
<u>Lantau Crossings</u>	
<ul style="list-style-type: none"> <li>Tuen Mun - Chek Lap Kok Link</li> </ul>	D2

- Notes :
- (1) First modelled year taken as 2006/2007 composite.
  - (2) R10 NLYLH opens mid 2007.
  - (3) R7 opens from 2007 onwards.
  - (4) R10 HKLL opens early 2008.
  - (5) Schemes marked "\*" are possible components of the Crosslinks highway network and no decision has yet been made by the Government regarding implementation of these projects.

Table 2 Railway Network Assumptions

<b>1999 – 2001</b>
<ul style="list-style-type: none"> <li>MTR Kwun Tong Line extension from Quarry Bay to North Point</li> </ul>
<b>2002 – 2006</b>
<ul style="list-style-type: none"> <li>KCR Extension from Hung Hom to East Tsim Sha Tsui</li> <li>MTR Tseung Kwan O Line extension from Eastern Harbour Crossing to Po Lam/Tseung Kwan O South</li> <li>MTR Kwun Tong Line extension from Lam Tin to Tiu Keng Leng</li> <li>Rail Link from Ma On Shan to KCR Tai Wai Station</li> <li>West Rail Phase I from West Kowloon Reclamation (Yen Chow Street) to Tuen Mun Centre via Kam Tin</li> <li>Passenger Rail from Sheung Shui to Lok Ma Chau</li> </ul>
<b>2007 – 2011</b>
<ul style="list-style-type: none"> <li>North Hong Kong Island Line between North Point and Hong Kong stations. Formed by extension of the Tung Chung Line and Tseung Kwan O Line. Configured either with "swap" scheme (in which Tung Chung Line takes over ISL east of Fortress Hill and Tseung Kwan O Line takes over ISL west of Tin Hau ) or by interchange at Tamar (Tung Chung Line extended eastwards to Tamar, Tseung Kwan O line extended from North Point to Tamar).</li> <li>4th Harbour Crossing/Rail Link from Hung Hom to Central (via Admiralty)</li> </ul>
<b>2012 – 2016</b>
<ul style="list-style-type: none"> <li>Rail Link from Diamond Hill to Hung Hom (East Kowloon Line)*</li> <li>KCR Link from Yen Chow Street via West Kowloon to East Tsim Sha Tsui (Kowloon Loop)</li> <li>Passenger Rail from Kam Tin to Sheung Shui/Lok Ma Chau</li> <li>Rail Link from Tai Wai to Diamond Hill</li> <li>MTR Extension from Sheung Wan to Green Island (West Hong Kong Island Line)</li> </ul>

Note : \* May be implemented in 2007-2011 period, especially if joined with Hung Hom – Central rail link.

Table 3 Forecast Population and Employment Totals by District; 2006, 2011 and 2016

Sector No.	District Description	Population			Employment		
		2006	2011	2016	2006	2011	2016
1	Central/Western	270068	327809	416773	522685	577024	604458
2	Wan Chai	181343	180921	185059	321383	348917	363064
3	Eastern	587693	579217	574265	286533	279158	272100
4	Southern	304607	321781	335062	94659	99521	110770
	<b>Hong Kong</b>	<b>1343711</b>	<b>1409728</b>	<b>1511159</b>	<b>1225260</b>	<b>1304620</b>	<b>1350392</b>
5	Kowloon City	483337	518579	577548	202731	193549	192756
6	Kwun Tong	626337	664852	750013	308684	329526	369853
7	Mong Kok	147496	144050	139033	117313	119723	119679
8	Sham Shui Po	471617	480637	496793	251517	275322	290267
9	Wong Tai Sin	552481	544370	535727	126270	139337	143085
10	Yau Ma Tei	179116	185220	187963	330526	343511	347779
	<b>Kowloon</b>	<b>2460384</b>	<b>2537708</b>	<b>2687077</b>	<b>1337041</b>	<b>1400968</b>	<b>1463419</b>
11	Tsuen Wan	273076	302498	324193	152959	156987	166229
12	Kwai Chung	394671	381017	373685	217972	226445	223173
13	Tsing Yi	193904	185098	179174	58576	58104	73700
14	Tseung Kwan O	394230	429017	456405	102485	109916	114460
15	Tuen Mun	503841	496594	533108	130175	134441	140418
16	Yuen Long	201531	191321	201556	50603	51406	52133
17	Tin Shui Wai	308028	301416	291919	43034	43814	42719
18	Sha Tin	460975	460346	465265	161825	159457	167065
19	Ma On Shan	191960	193228	194686	29490	28366	28719
20	Tai Po	261562	253147	251144	86316	74459	75313
21	Fan Ling/Sheung Shui	244246	383986	393999	59740	102087	100424
22	Rural SWNT	181121	344486	439716	113545	200442	239487
23	Rural SENT	58905	59189	58927	18862	17492	17833
24	Rural NWNT	179582	325243	482069	77654	84833	99202
25	Rural NENT	84769	83488	89982	23538	16138	16375
	<b>New Territories</b>	<b>3932401</b>	<b>4390074</b>	<b>4735828</b>	<b>1326774</b>	<b>1464377</b>	<b>1557250</b>
	<b>Total</b>	<b>7736496</b>	<b>8337510</b>	<b>8934064</b>	<b>3889075</b>	<b>4169965</b>	<b>4371061</b>

Table 4 Traffic Growth in CTS Zone No. 34

Daily Traffic				Traffic Growth Per Annum	
1996		2016		1996 - 2016	
Gen.	Attn.	Gen.	Attn.	Gen.	Attn.
23479	23457	36754	36710	2.27%	2.26%