Generation and Refinement of Prototype Preferred Options

Chapter 4

CHAPTER FOUR
GENERATION AND REFINEMENT OF PROTOTYPE PREFERRED OPTIONS

Scenarios Development

1. Two broad strategies have been formulated on the basis of the foregoing evaluations, taking into account the overall development needs for the next two decades. Essentially, Scenario A has been conceived as a low growth scenario which perceives the PRD to be the major economic hinterland of Hong Kong. This is a trend-based scenario which takes account of the interaction between growth and development in Hong Kong and the PRD. Scenario B was formulated on the basis that the Guangdong Province and the inner provinces of China will be the major economic hinterland of Hong Kong.

2. These two scenarios are not necessarily mutually exclusive, but are reflections of the responses to growth as development patterns and trends in the Region emerge. Both the Refined Preferred Options for the two scenarios have been generated taking account of the following components:

   (a) new cross-border road transport links;
   (b) new cross-border rail links;
   (c) new rail freight distribution centres;
   (d) additional border crossing points;
   (e) development of high technology corridors;
   (f) provision of river trade freight distributing facilities; and
   (g) new residential developments in the Northern New Territories.

3. The broad development pattern and transport networks of Scenarios A and B are schematically presented in Figures 4.1(a) and 4.1(b), whereas the broad development components and the detailed distribution of population and jobs are shown in Tables 4.1, 4.2(a) and 4.2(b).

4. The major difference between the two Prototype Preferred Options is in the spatial emphasis of optional strategic growth areas. With an assumed lower population, Scenario A is essentially Metro-based with a 'growth pole' at Green Island. Scenario B basically includes all opportunity spaces available in both Metro area and NT due to the need to accommodate additional population and landuse requirements. The development components and the spatial distribution are summarized in Table 4.3.

POPULATION		
Base Growth	:	6.51 million
2011 (A)	:	7.52 million
2011 (B)	:	8.10 million
JOB NEEDS		
Base Growth	:	3.17 million
2011 (A)	:	3.65 million
2011 (B)	:	3.98 million
ADDITIONAL URBAN LAND NEEDS		
2011 (A)	:	890 ha
2011 (B)	:	1490 ha
ADDITIONAL LAND NEEDS FOR THE PORT		
2011 (A) and (B)	:	1560 ha

Table 4.1 HONG KONG S GROWTH NEEDS

TABLE 4.2(a) POPULATION DISTRIBUTION ASSUMED FOR THE TDS REVIEW REFINED PREFERRED OPTIONS ('000)

Sector	(1) 1992	Scenario A 2001	Scenario A 2006	Scenario A 2011	Scenario B 2001	Scenario B 2006	Scenario B 2011
1. METRO							
Hong Kong Island							
Hong Kong West	252	266	292	295	266	295	298
Hong Kong East	711	754	780	791	754	788	804
Hong Kong South	257	259	260	298	259	263	320
Central & Wan Chai Reclamation	0	0	9	14	0	9	14
Green Island Reclamation	0	0	0	113	0	0	128
Total	1220	1279	1341	1511	1279	1355	1564
Kowloon							
Kowloon West	529	456	460	459	456	465	459
Kowloon East	1193	1166	1183	1189	1166	1202	1188
Kowloon South	212	252	256	266	252	259	266
West Kowloon Reclamation	0	85	91	95	85	91	95
Kai Tak Airport Site	0	89	94	95	89	95	95
Kowloon Bay Reclamation	0	14	87	95	14	150	215
Total	1934	2062	2171	2199	2062	2262	2318
Tsuen Wan	687	643	654	666	643	677	666
Sub-total	3841	3984	4166	4376	3984	4294	4548
2. NWNT							
Tuen Mun	354	439	440	440	439	446	440
Yuen Long	99	146	149	177	146	159	177
Tin Shui Wai	8	325	317	319	325	321	318
Tuen Mun - Yuen Long Corridor	39	62	160	190	62	196	239
Kam Tin	25	18	21	30	18	21	43
Ngau Tam Mei	38	32	48	46	32	48	63
Rural NWNT	76	84	104	101	84	106	112
Sub-total	639	1106	1239	1303	1106	1297	1392
3. NENT							
Sha Tin / Ma On Shan	495	550	558	562	550	565	561
Sai Sha	15	32	34	40	32	34	40
Tai Po	176	190	198	195	190	201	194
Fanling / Sheung Shui	128	207	219	219	207	222	339
Rural NENT	71	97	108	103	97	109	102
Sub-total	885	1076	1117	1119	1076	1131	1236
4. SWNT							
Tung Chung / Chek Lap Kok	1	29	50	146	29	51	175
Tai Ho	0	0	0	6	0	0	135
South Lantau / Discovery Bay	18	46	48	49	46	49	49
Port Peninsula / Islands	28	31	44	45	31	46	45
Sub-total	47	106	142	246	106	146	404
5. SENT							
Tseung Kwan O	93	309	328	421	309	404	450
Sai Kung / Rural SENT	42	49	62	62	49	63	62
Sub-total	135	358	390	483	358	467	512
Territory Land Total	5547	6630	7054	7527	6630	7335	8092

Notes: (1) Data for 1992 are based on the set of data used by 92 TCS.
(2) Figures may not add up to total due to rounding.

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TABLE 4.2(b) EMPLOYMENT DISTRIBUTION ASSUMED FOR THE TDS REVIEW REFINED REFERRED OPTIONS ('000)

Sector	(1) 1992	Scenario A 2001	Scenario A 2006	Scenario A 2011	Scenario B 2001	Scenario B 2006	Scenario B 2011
1. METRO							
Hong Kong Island							
Hong Kong West	276	327	373	379	325	391	418
Hong Kong East	388	431	459	460	430	475	487
Hong Kong South	68	94	97	100	95	97	105
Central & Wan Chai Reclamation	37	48	63	105	48	73	115
Green Island Reclamation	0	3	11	24	10	9	24
Total	769	903	1003	1068	908	1045	1149
Kowloon							
Kowloon West	323	304	318	312	302	327	326
Kowloon East	505	471	480	471	473	495	492
Kowloon South	270	334	365	373	332	383	397
West Kowloon Reclamation	1	41	57	62	40	57	65
Kai Tak Airport Site	39	15	21	33	15	24	36
Kowloon Bay Reclamation	15	26	41	60	27	65	94
Total	1153	1191	1282	1311	1189	1351	1410
Tsuen Wan	344	358	341	342	351	349	354
Sub-total	2266	2452	2626	2721	2448	2745	2913
2. NWNT							
Tuen Mun	96	124	126	123	123	128	123
Yuen Long	38	56	58	59	56	58	60
Tin Shui Wai	1	62	62	62	60	60	60
Tuen Mun - Yuen Long Corridor	13	17	31	34	21	41	49
Kam Tin	6	7	11	13	9	11	19
Ngau Tam Mei	10	12	13	15	14	17	21
Rural NWNT	15	30	33	35	32	41	51
Sub-total	179	308	334	341	315	356	383
3. NENT							
Sha Tin / Ma On Shan	144	162	165	171	161	169	174
Sai Sha	0	6	7	8	6	9	9
Tai Po	52	62	63	66	61	63	68
Fanling / Sheung Shui	29	58	60	74	59	75	112
Rural NENT	9	28	28	26	39	41	42
Sub-total	234	316	323	345	326	357	405
4. SWNT							
Tung Chung / Chek Lap Kok	1	49	59	80	45	60	87
Tai Ho	0	5	3	3	8	7	27
South Lantau / Discovery Bay	4	12	12	12	11	12	12
Port Peninsula / Islands	8	26	26	35	20	24	38
Sub-total	13	92	100	130	84	103	164
5. SENT							
Tseung Kwan O	12	66	77	90	64	87	94
Sai Kung / Rural SENT	15	23	21	20	20	21	20
Sub-total	27	89	98	110	84	108	114
Territory Land Total	2719	3257	3481	3647	3257	3669	3979

Notes: (1) Data for 1992 are based on the set of data used by 92 TCS.
(2) Figures may not add up to total due to rounding.

Table 4.3 SPATIAL DISTRIBUTION OF STRATEGIC DEVELOPMENT COMPONENTS

Regional Economic Orientation	Broad Spatial Distribution of Strategic Components	
	Major Strategic Common Growth Components	Major Strategic Optional Growth Components
Scenario A High Growth with PRD as hinterland, HK to develop into a regional service and information centre with more entrepot high-tech manufacturing activities	Metro emphasis to include: - Kowloon Bay Phase 1 and Tsuen Wan Bay for urban decantation; - Tseung Kwan O Phase 3 to optimize infrastructure provision in SENT; and - Central and Wanchai Reclamation to provide for central business district extension.	Metro emphasis to include: - Single Metro growth pole at Green Island complemented by HK South to provide mass housing on HK Island; and - Tung Chung development to provide airport new town and optimize infrastructural provision of North Lantau.
Scenario B Extra High Growth with both PRD and inner China as hinterland, HK to emerge as a regional and international business centre providing financial, information and entrepot functions		Metro and NWNT emphasis in addition to Scenario A to include: - Second Metro growth pole at Kowloon Bay Phases 2 and 3 to create a new employment centre; - Tung Chung/Tai Ho new town development to optimize development potential of North Lantau; - Tuen Mun-Yuen Long Corridor for rural upgrading; and - Border Area development to satisfy housing needs and facilitate cross-border interaction.

General Approach for Refinement

5. In the final stage of strategy formulation, an iterative and integrated evaluation process has been adopted to refine the performance of the Prototype Preferred Options, bringing together the findings of various streams of assessment and to derive a refined landuse-transport-environmental framework.

6. A conceptual approach for the refinement of the Prototype Preferred Options is schematically presented in Figures 4.2 and 4.3. In the first stage, zonal data on landuse, employment and socio-economic activities for the Prototype Preferred Options were proposed to enable transport and environmental assessments to be carried out. Based on the findings of the assessments, areas of concern and proposals for further improvements based on both supply and demand side management were put forth. Efforts were made to resolve conflicting views and integrate the findings of other assessments i.e. the economic, planning and transport assessments, and other considerations such as institutional and policy considerations. Reconciled landuse patterns and zonal data for both Scenarios A and B were then derived (i.e. the Refined Preferred Options) for a second round evaluation. The following sections describe individual components of the strategies and the rationale for refinements undertaken of the Prototype Preferred Options.

Road Transport Links and Border Crossings

7. It should be noted that all previous planning studies were based on a territorial population of 6.5 million for the year 2011. With the forecast increases in population to 7.5 and 8.1 million for Scenarios A and B respectively, modifications to the transport network are required. At present, the only major transport corridors which connect the Metro area with Guangdong Province is Tolo Highway and the KCR line. Additional corridor between North Lantau and Shenzhen (known as Route Y in the TDS Review) is put forth in both options to facilitate better economic interaction with the catchment area. Two main options are possible to alleviate the existing problems facing the road networks viz. increasing the capacity of existing corridors and the development of additional strategic transport corridor(s).

8. Options available for increasing the committed capacity which have been considered in the TDS Review include :

(a) Route 16 between Shatin and Kwai Chung;
(b) additional tunnel capacity on Route 3 to connect the urban areas; and
(c) widening of Tolo Highway between Sha Tin and Tai Po.

9. Four concepts have been proposed for the Route Y proposal which are illustrated in Figure 4.4. All of these suggestions will require detailed environmental assessments to be carried out before they can be considered to be acceptable components of the long term transport strategy. This is a key issue to be addressed in detail at a later stage. In the present assessment, the key concerns are identified and are presented along with other environmental issues relating to the transport strategies in Chapter Fourteen "Transport Links".

10. The new road and railway network used for the transport testing of the Transport Strategies are illustrated in Figures 4.5 and 4.6. The phasing of these road and railway projects are detailed in Tables 4.4 and 4.5. The major differences between Scenarios A and B essentially relate to the proposed North-South Highway between the Border and the Metro area by 2011 under Scenario B, and for the Green Island Link a D3 connection is proposed for Scenario B with a D2 connection for Scenario A.

11. Input data and refinements were made to the transport model scenarios as an integral part of the iterative evaluation process. For the 2011 transport network , there are essentially two categories: Common Projects and Other Proposals. The common projects are those which form the baseline network and include all existing and committed infrastructure as well as those which have firm policy acceptance. As a result, the baseline links form the majority of the network and are common to both Scenarios. Major common projects are given in Tables 4.4 and 4.5. The projected daily patronage on major sections of the passenger rail

Table 4.4 ROAD PROJECT TESTED (IN ADDITION TO EXISTING/COMMITTED PROJECTS) FOR THE TDS REVIEW REFINED PREFERRED OPTIONS

Strategic Road Link	Configuration	Scenario A			Scenario B		
		2001	2006	2011	2001	2006	2011
Access to Airport / Port Facilities and Related Development							
1. Sham Tseng Link	D2		o	o		o	o
2. Route 9 (CRA4) Stonecutters Island to Tsing Yi	D2			o			o
3. Roads P1 (the remaining section), P2 and P3 on Lantau Island	D2		o	o		o	o
4. Tseung Kwan O Western Coastal Road	D2		o	o		o	o
5. Tuen Mun Foothills Bypass	D2		o	o		o	o
6. Tuen Mun Southern Relief Road	D2		o	o		o	o
7. Tuen Mun Port Trunk Road	D2		o	o		o	o
8. Roads in Port Peninsula connecting North Lantau Expressway	D3		o	o		o	o
9. Green Island Link	D2			o			
	D3						o
Hong Kong Island							
10. Roads P1, P2 on Central and Wan Chai Reclamation	D2	o	o	o	o	o	o
11. Central and Wan Chai Bypass	D2		o	o		o	o
12. Island Eastern Corridor Link connecting Central and Wan Chai Bypass	D4		o	o		o	o
13. Route 7 from Belcher's Bay to Aberdeen	D2			o			o
Kowloon and Tsuen Wan							
14. Central Kowloon Route	D2		o	o		o	o
15. North-south Highway from Hung Hom Bypass to Kwun Tong Bypass	D2		o	o		o	o
16. Road T2 in SE Kowloon Reclamation	D2		o	o		o	o
17. District Roads in Phases 2 and 3 of SE Kowloon Reclamation	D2		o	o		o	o
18. Route 5 Extension from Shek Wai Kok to Chai Wan Kok	D2		o	o		o	o
Northeast New Territories							
19. Sha Tin Trunk Roads T4 and T7	D2		o	o		o	o
Northwest New Territories							
20. North-South Highway connecting Route 2 to West Kowloon Reclamation	D2						o
Southwest New Territories							
21. Discovery Bay Link connecting Road P1	S2		o	o		o	o
New Cross Border Points and Associated Connectors							
22. Outer Deep Bay Crossing	D2		o	o		o	o
23. Tuen Mun Southern Bypass	D2			o			o
24. Tuen Mun Eastern Bypass	D2			o			o
25. Yam O Link connecting North Lantau Expressway with Tuen Mun Eastern and Southern Bypasses	D2			o			o

Source : Planning Department

Table 4.5 RAIL PROJECT TESTED (IN ADDITION TO EXISTING / COMMITTED PROJECTS) FOR THE TDS REVIEW REFINED PREFERRED OPTIONS

Line / Link	Scenario A			Scenario B		
	2001	2006	2011	2001	2006	2011
PASSENGER RAILS						
Western Corridor						
1. West Kowloon Reclamation to Tuen Mun North via Kam Tin	o	o	o	o	o	o
2. Tuen Mun North to Tuen Mun Central		o	o		o	o
3. Yuen Long to Tin Shui Wai North	o	o	o	o	o	o
4. Kam Tin to Lo Wu via Sheung Shui	o	o	o	o	o	o
5. Sheung Shui to Lok Ma Chau	o	o	o	o	o	o
6. Kam Tin to Lok Ma Chau	o	o	o	o	o	o
Eastern Corridor						
7. Ma On Shan to KCR Tai Wai Station	o	o	o	o	o	o
8. Hung Hom KCR Station to TST	o	o	o	o	o	o
9. Lam Tin to Tseung Kwan O	o	o	o	o	o	o
10. Diamond Hill to Hung Hom KCR Station			o		o	o
11. TST to West Kowloon Reclamation			o			o
12. Tai Wai to Diamond Hill						o
13. Ma Tau Kok to Lam Tin						o
Hong Kong Island Lines						
14. MTR Kwun Tong Line Extension from Quarry Bay to Tin Hau	o	o	o	o	o	o
15. West Hong Kong Island Line from Sheung Wan to Green Island			o			o
16. North Hong Kong Island Line from Central Hong Kong Station to Tin Hau via Exhibition Centre		o	o		o	o
17. Local Airport Line Extension from Exhibtion to Ma Tau Kok						o
18. South Hong Kong Island Line			o			o
LRT Regional System						
19. Completion of the existing LRT System from Pui To to So Kwun Wat			o			o
FREIGHT RAILS						
1. Port Rail Line from Kwai Chung to Lo Wu	o	o	o	o	o	o
2. Port Rail Line Extension from Kam Tin to Lantau Port			o			o

Note : Projects no. 12, 13 and 17 are new proposals in addition to the RDS recommendations

Source : Planning Department

network for the two Scenarios are given in Figures 4.8 and 4.9.

12. It should be noted that for Scenario A the Green Island Link is a dual 2 lane carriageway whereas a dual 3 lane carriageway is proposed for Scenario B to reflect the demand. Previously it was assumed that the additional border crossing under Scenario A would be at Man Kam To, with Route Y assumed for Scenario B. On the basis of the results of the transport testing, it was considered more appropriate to adopt the same assumptions for both Scenarios for the border crossing points with progressive implementation of these facilities to cater for increasing forecast demand.

13. The Route Y concept has the potential to provide additional border crossings which would assist traffic flow between Guangdong and Hong Kong's port and airport. This proposal has however serious environmental consequences and would require detailed investigations to be carried out before considering preliminary design. It should be noted that the Route Y concept is a very long term option (beyond 2011) which will allow time for detailed studies which will indubitably be required to be carried out.

14. In terms of defining the environmental effects of the transport proposals the number and type of vehicles making border crossings every day is particularly significant. Estimated vehicle flows are presented in Tables 4.6 and 4.7.

Table 4.6 CROSS BORDER ROAD TRAFFIC ASSUMPTIONS FOR SCENARIO A

Border Crossing		2 Way Daily Vehicles		
		2001	2006	2011
Man Kam To	GV	13260	16600	18510
	Car	360	520	590
	Coach	120	130	140
	Total	13740	17250	19240
Sha Tau Kok	GV	4910	6910	9250
	Car	140	210	290
	Coach	50	50	70
	Total	5100	7170	9610
Lok Ma Chau	GV	41730	46100	46270
	Car	1150	1440	1460
	Coach	380	360	370
	Total	43260	47900	48100
Route Y	GV	0	20290	46270
	Car	0	630	1460
	Coach	0	160	370
	Total	0	21080	48100
Total	GV	59900	89900	120300
	Car	1650	2800	3800
	Coach	550	700	950
	Total	62100	93400	125050

Table 4.7 CROSS BORDER ROAD TRAFFIC ASSUMPTIONS FOR SCENARIO B

Border Crossing		2 Way Daily Vehicles		
		2001	2006	2011
Man Kam To	GV	13630	18300	18040
	Car	680	1180	1400
	Coach	250	410	470
	Total	14560	19890	19910
Sha Tau Kok	GV	6820	9150	9020
	Car	340	590	700
	Coach	120	200	240
	Total	7280	9940	9960
Lok Ma Chau	GV	45450	45750	45090
	Car	2280	2970	3500
	Coach	830	1020	1190
	Total	48560	49740	49780
Route Y	GV	0	30200	72150
	Car	0	1960	5600
	Coach	0	670	1900
	Total	0	32830	79650
Total	GV	65900	103400	144300
	Car	3300	6700	11200
	Coach	1200	2300	3800
	Total	70400	112400	159300

15. The goods vehicle crossings were also reviewed to reflect current thinking and are illustrated in Figures 4.10 through 4.11.

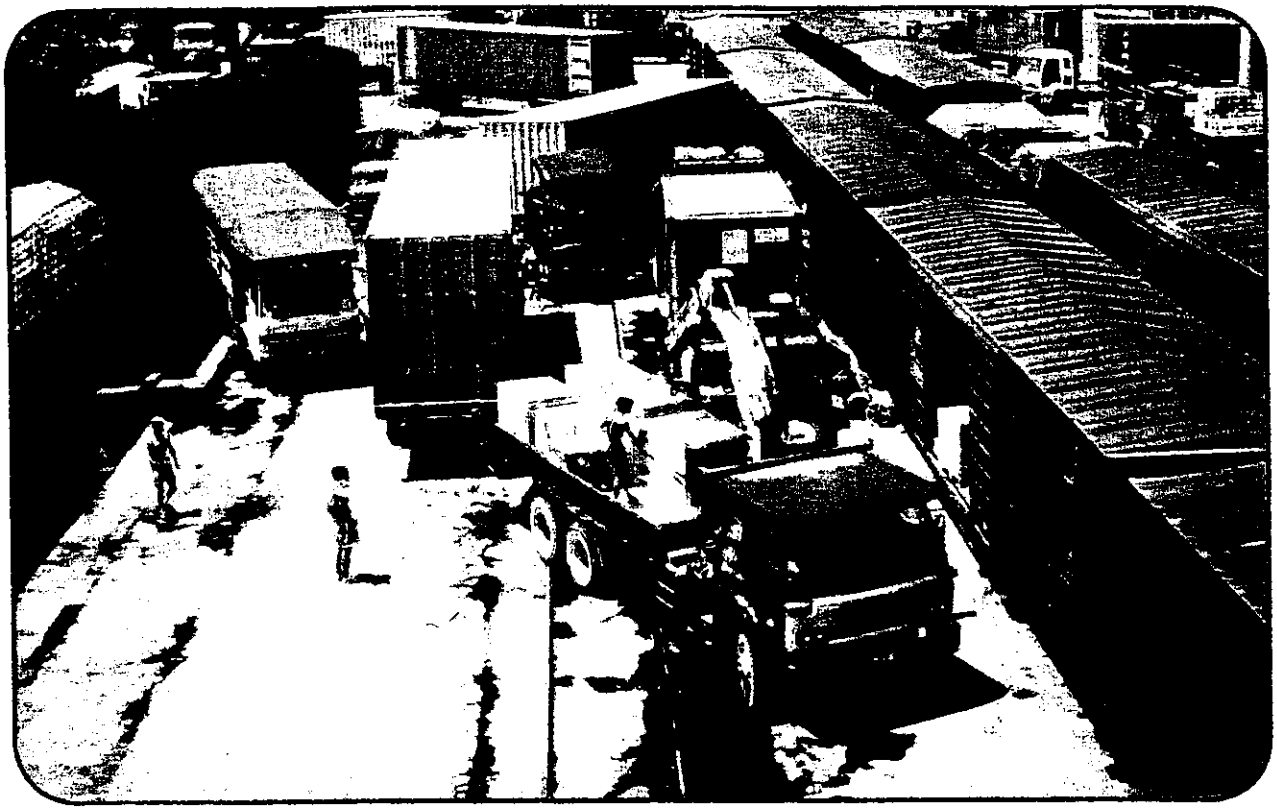
Rail Transport Links, Freight Distribution and Border Crossings

16. One of the ways to accommodate the future developments in the Territory is to focus on rail patronage which have major environmental advantages (although noise can be problematic). The rail network (which includes feeder services of buses and light rail) tested for the TDS Preferred Options is shown in Figure 4.6. There is presently only one direct link between Hong Kong and Guangdong (i.e. the KCR line) which serves both passenger and freight transport. As it has been concluded that the capacity will be exceeded in the short term, alternative arrangements will be required to meet the forecast demand.

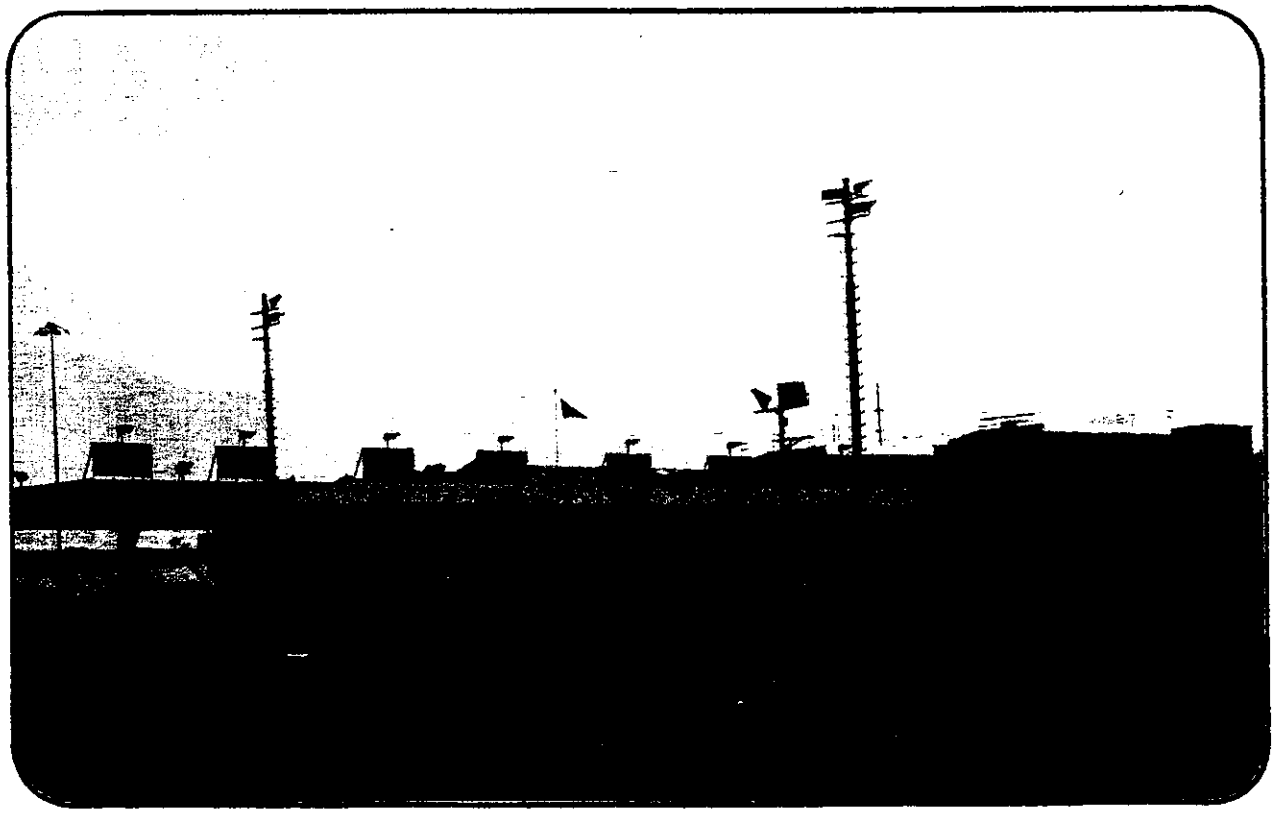
17. Common rail projects were adopted on the basis of the findings of the Rail Development Study, although the outer western corridor between Green Island and Tuen Mun was not included as it is likely to be a very long term option, extending beyond the time frame of this Study.

18. Additional links have been included using the findings of the first round evaluations. The North-South Highway was identified as being required under Scenario B to connect the Border with the western Metro area to relieve Tolo Highway (section north of Tai Po) and Route 3. Rail links between Tai Wai and Diamond Hill and the LAL extension connecting Tin Hau with Hung Hom are also proposed under Scenario B.

19. The Railway Development Strategy proposed a new north-south railway running from the Border via Kam Tin to the Metro area i.e. the Western Corridor, to be implemented by 2001. A Port Rail Line would be built as part of the Western Corridor, from the existing border



Rail freight transport capacity needs to be improved



Additional cross border link is required

crossing at Lo Wu to Kwai Chung with a reservation for a spur for later connection to the Lantau Link. The remain part of the Western Corridor is a cross-border passenger service proposed to connect the border to a terminal on the West Kowloon Reclamation adjacent to the Airport Railway's West Kowloon Station.

20. For the purpose of providing early relief to the Lo Wu crossing, a branch line from the existing KCR line at Sheung Shui to Lok Ma Chau could form the first phase of the project. In the long term, this service is intended to link with the KCR for the border crossing at Lok Ma Chau and will link into the Shenzhen suburban system. In the very long term, it has been postulated that there may be a high capacity rail link between Kowloon and Guangdong along the east coast of the Pearl River Delta which will connect airports with major population and employment centres. Differences between the two Scenarios include the early commencement of the passenger rail link between Diamond Hill and Hung Hom by 2006, and the addition of two passenger rail links (connecting Tai Wai with Diamond Hill and Hung Hom with Tin Hau) by 2011 for Scenario B.

21. The operation of the proposed Port Rail Line will require the establishment of a rail freight distribution centre providing marshalling yards and container transhipment. In the Railway Development Strategy, it was proposed that such a facility could be sited to the west of Fanling, along the Western Railway Corridor. Another possible location is at Pinghu on the main Shenzhen to Guangdong and Beijing railway lines. Pinghu also provides a branch for the three strategic ports in the area viz. Hong Kong, Yantian and western Shenzhen. Provision of a single rail freight centre at Pinghu has the advantage of concentrating facilities rather than allowing multiple ad hoc developments, thereby ensuring greater control in terms of facilities provided and pollution prevention.

22. The second strategic rail option is parallel to Route Y between Chek Lap Kok and Shenzhen, although some doubt has been expressed as to the viability of developing another such railway line in addition to the Western Corridor. The Freight Transport Study stressed the importance of early implementation of the Port Rail Link, preferably before 2003, to avoid a substantial portion of potential trade from the Chinese interior being diverted to new Chinese ports. The Port Rail Link is proposed under Scenario B for implementation by 2011.

23. At present, the only railway border crossing is at Lo Wu. As the number of passengers crossing the border is expected to double by 2011, as compared to 1992 (refer to Table 4.8 below), it is evident that additional facilities will be required. Apart from the proposed second crossing at Lok Ma Chau in association with the Western Corridor, a rail link across Deep Bay from Shekou to Tin Shui Wai has also been suggested. This alternative would also permit a connection to be made to the NWNT light rail system. However, such a crossing would need, inter alia, a full scale environmental impact assessment to be carried out as there will be potentially serious environmental consequences associated with such a development, even if the crossing was provided in the form of a submerged tube tunnel.

Table 4.8 CROSS BORDER DAILY RAIL PASSENGER TRIPS (2-way)

Scenario	Crossing Point		Total
	Lo Wu	Lok Ma Chau	
2001A	129700	51400	181100
2006A	149300	91600	240900
2011A	153500	139400	292900
2001B	142600	56500	199100
2006B	171600	105400	277000
2011B	184200	167300	351500

High Technology Corridors

24. In the 1992 Industry Department Study on Science Parks, it was proposed that a high technology corridor should be established in keeping with Hong Kong's expansion in this field. The stated aim of this concept is to attract investment in high value and high technology activities providing easy access to markets in China, the port and airport as well as the urban areas. Furthermore, this corridor was also conceived to be used by institutions of higher education. The Science Park Study proposed two potential development corridors:

(a) a north-south axis from Central to the border via Chinese University/Tai Po Industrial Estate; and

(b) an east-west axis from Chek Lap Kok to Hong Kong University of Science and Technology.

25. The enhancement of the north-south technology corridor has greater potential of successful implementation in the medium term as it includes existing well-defined nodes such as the Chinese University, Tai Po Industrial Estate and the City Polytechnic. The second option lacks established centres (or base points) and largely depends on the implementation of Route Y which makes it a long term proposal rather than to be developed in the short or medium term.

River Trade Freight Distribution Centres

26. In the Port and Airport Development Study (PADS), it was proposed that the river trade activities should be located to the west of Tuen Mun to avoid additional congestion of traffic in the Western Harbour area and to preclude the need for barges to traverse Ma Wan Channel. Further river trade facilities have been proposed for North Lantau and, if Route Y were to be realised, then the possibility of providing river trade facilities at Neilingding or Lung Kwu Chau also exists. The merit of the latter proposal is that cargo could be routed to the port via a road bypassing the already congested and environmentally sensitive areas (in terms of noise and air pollution) of Tuen Mun and the Metro area.

Residential Developments

27. Strategic growth areas which have been identified for inclusion in the development scenarios at different time horizons, and with different levels of development potential, are illustrated in Figure 4.7.

28. Strategic growth areas which are common to both scenarios include the final phase of Central and Wanchai Reclamation, Kai Tak-Kowloon Bay Phase I, Tsuen Wan Bay Reclamation and Tseung Kwan O Phase III. Some additional solution spaces have also been identified as potential development areas after 2001 including North Lantau Extension, Tseung Kwan O Extension, Border Area, Metro Area Intensification and the intensification of the Yuen Long - Tuen Mun Corridor. These solution spaces have not been the subject of comprehensive environmental assessments at this stage as there is little information upon which to base any evaluations. Any areas which could be environmentally unacceptable or which require detailed consideration have, however, been identified.

Industrial Strategy

29. As a result of the restructuring of the manufacturing sector, it is anticipated that the demand for industrial land will increase only slightly in comparison with the historical trend. It is also anticipated that the nature of the activities will indubitably change. The industrial land strategy was formulated on, inter alia, the principle that priority should be given to already

formed areas and where infrastructure already existed. The decentralisation of the Metro area to non-Metro subregions close to the port, airport and along routes leading to the Border is also a development principle subject to detailed study for each proposal. The fundamental aims of the industrial strategy include the reduction of interface problems, improvement in the job balance (with consequential improvements in environmental quality as the need to travel to work is reduced) while providing distribution centres close to the processing plants in the PRC.

Port Development

30. Port back-up and open storage activities were also identified as being significant contributors to the growth of goods vehicle trips. The forecast demand for port back-up and open storage land is shown in Table 4.9. The offsite impacts associated with port development has also been identified as an important area for further study, at the district level.

Table 4.9 FORECAST DEMAND FOR PORT BACK UP AND OPEN STORAGE LAND (hectares)

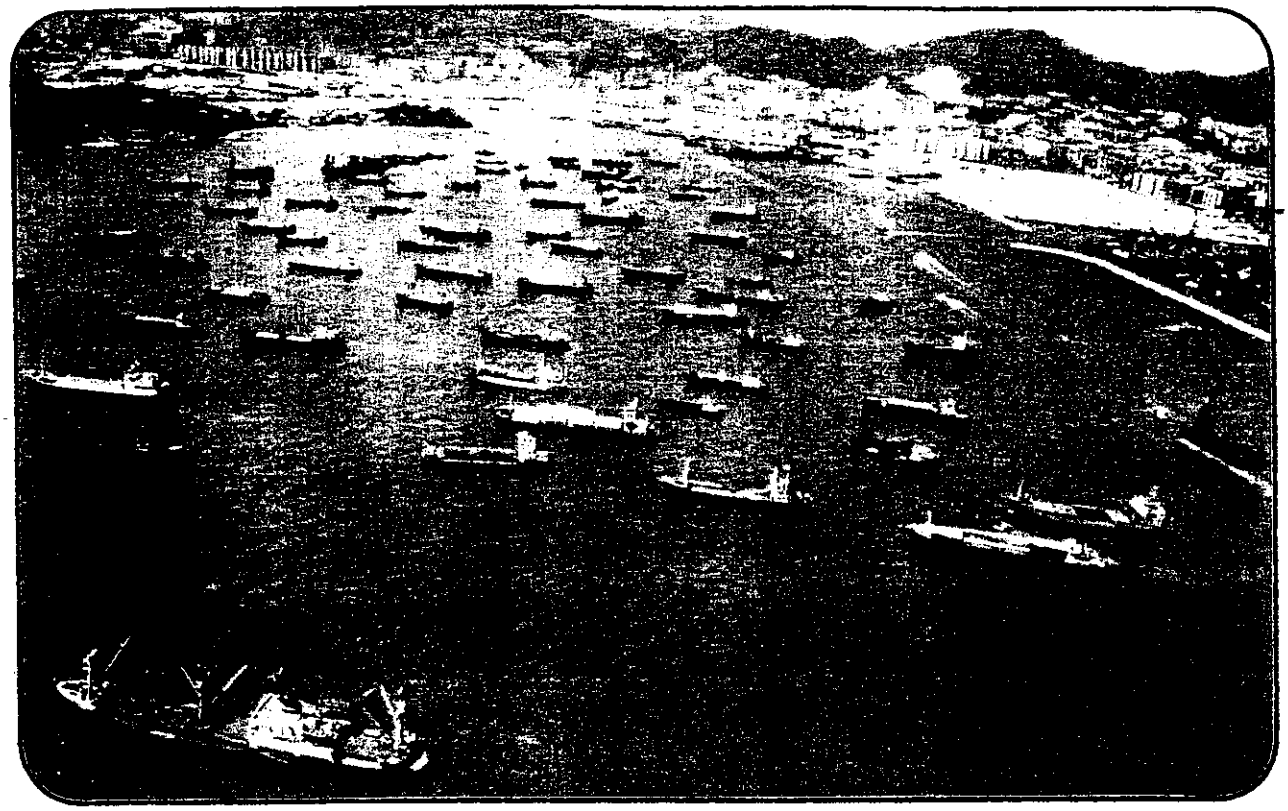
Use	2001		2006		2011	
	A	B	A	B	A	B
Port Back-Up	377	380	436	441	501	507
Open Storage	450	555	476	640	512	753
Total	827	935	912	1081	1013	1260

Key Issues

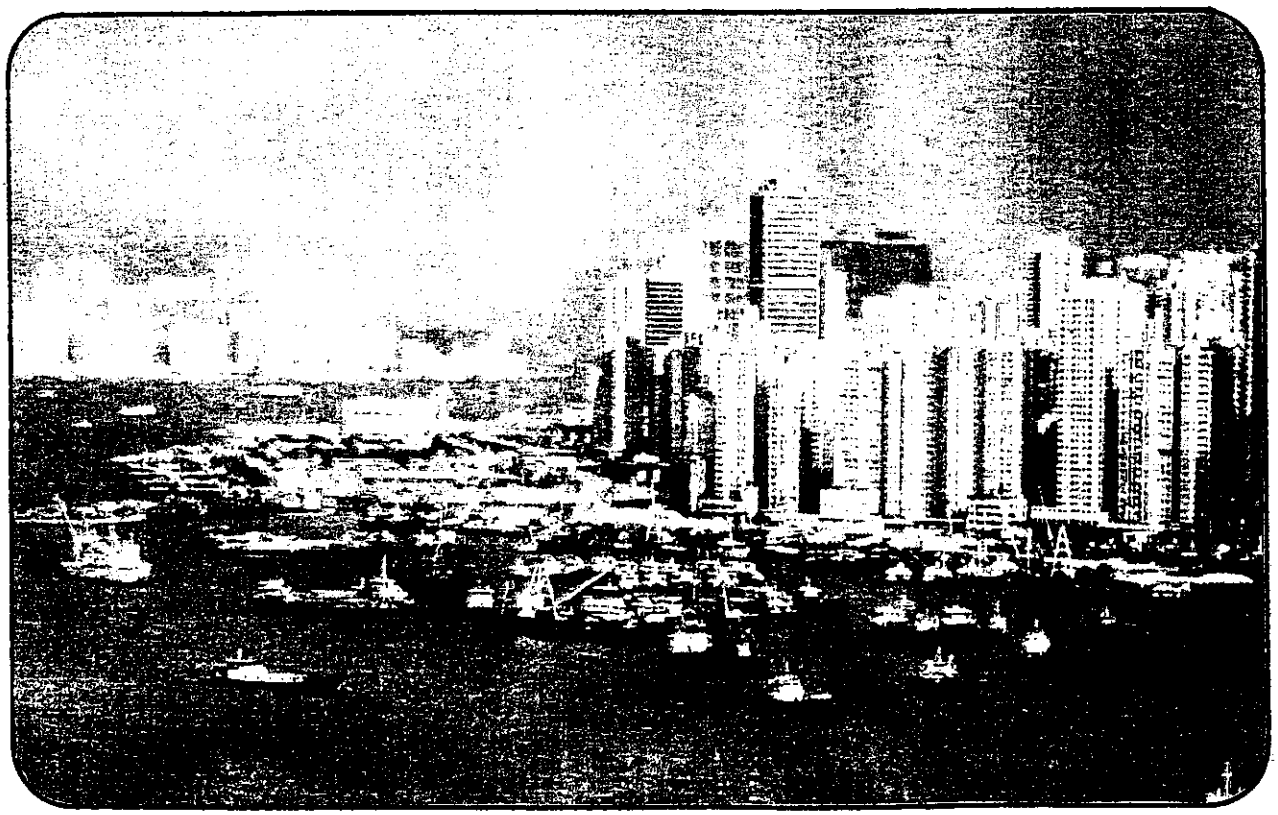
31. Key issues which were identified in the first round evaluations relate to the generation of liquid wastes, and the implications for their treatment and disposal. The rural areas of the NWNT and NENT gave rise to particular concern as a result of development pressures forecast under Scenario B. Vehicular emissions were identified as a key issue requiring further study, especially in the context of the AQO in the Harbour, Tsuen Wan -Kwai Tsing and Tuen Mun Air Control Zones. Dust has also been identified as a territory-wide problem from multifarious sources. Elevations in ambient noise levels as a result of the burgeoning development especially in hitherto rural areas (NWNT, NENT, Border Area) could be as significant as the increase forecast in the Metro area on account of the traffic demand and the requirement to create transport corridors to keep apace with the forecast demand. It was agreed that the issues pertaining to noise would be more adequately addressed at the district planning level rather than under the TDS Review. With the increases in population forecast even in the short term, the issues relating to solid waste disposal require further consideration, especially in connection with the adequacy of the existing disposal facilities.

32. Other environmental issues which were identified in the first round evaluations include the need to review the phasing of the developments with respect to the provisions already made under the Sewerage Master Plans for the collection, treatment and disposal of liquid wastes. Key areas of concern relate to NWNT and NENT in terms of collection facilities and, most particularly, the capability of the existing and planned treatment and disposal facilities to accommodate the forecast increases in flow rates and pollution loads. Concern has also been expressed in connection with the disposal of effluent (whether treated or not) to Deep Bay and Mai Po Marshes in terms of the potential impacts on the fragile ecosystem maintained therein.

33. While it has been fully recognised that the assessment of the assimilative capacity of the Territorial waters is an essential component of the long term development control programme, the complexities associated with these issues are outwith the scope of the present assessment.



Congestion of traffic in the Western Harbour



River trade activities should be relocated from Metro Area

Furthermore, it would be remiss to merely scratch the surface of this issue which needs to be tackled holistically, as described in the EIA Report of the initial assessment of the Preferred Options, by both the PRC and Hong Kong.

34. Similarly, it was illustrated that issues relating to environmental thresholds and assimilative capacities of individual water bodies and airsheds were too complex to be evaluated in the context of the TDS Review, but require further detailed study.

Scope for Refinement

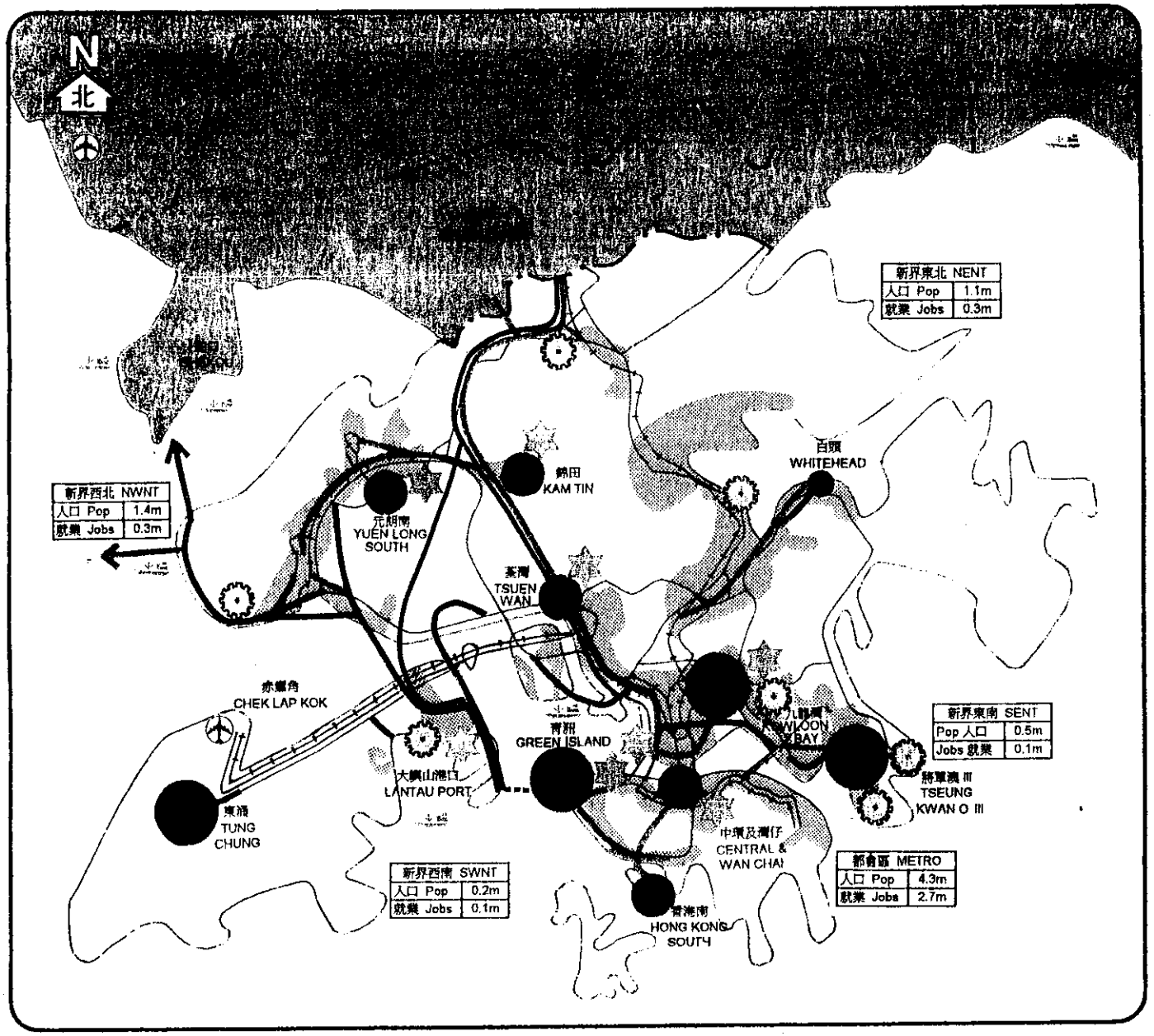
35. Having defined the key issues it was then necessary to determine the scope for refinement. The principal mechanisms which were considered in terms of the land-use and transport data matrices were based on demand and supply management. Data inputs to the transport model were revised using the results of the transport tests and the environmental assessments while still meeting forecast demand. Measures adopted include the minimisation of road travel, and assigning a greater proportion of travel to the least damaging nodes in terms of protection of air quality. The amount of personal travel and freight transport by the least damaging (environmentally) nodes, the market trend towards emission controls on vehicles and the trend toward emission free industries, were all included in the refinement process.

36. The population forecasts for the Preferred Options were given by districts for each time horizon (as already shown in Table 4.1(a)). There is little scope for reducing these forecasts although residential population and location of jobs and industrial developments were redistributed to those areas which could have capacity in the existing systems to accommodate such expansion.

37. In addition to the foregoing components of the development scenarios, the preservation of conservation, scenic and amenity areas has also been included in the overall development strategies wherever possible. The redistribution of jobs and industries has not therefore been permitted to encroach on such areas.

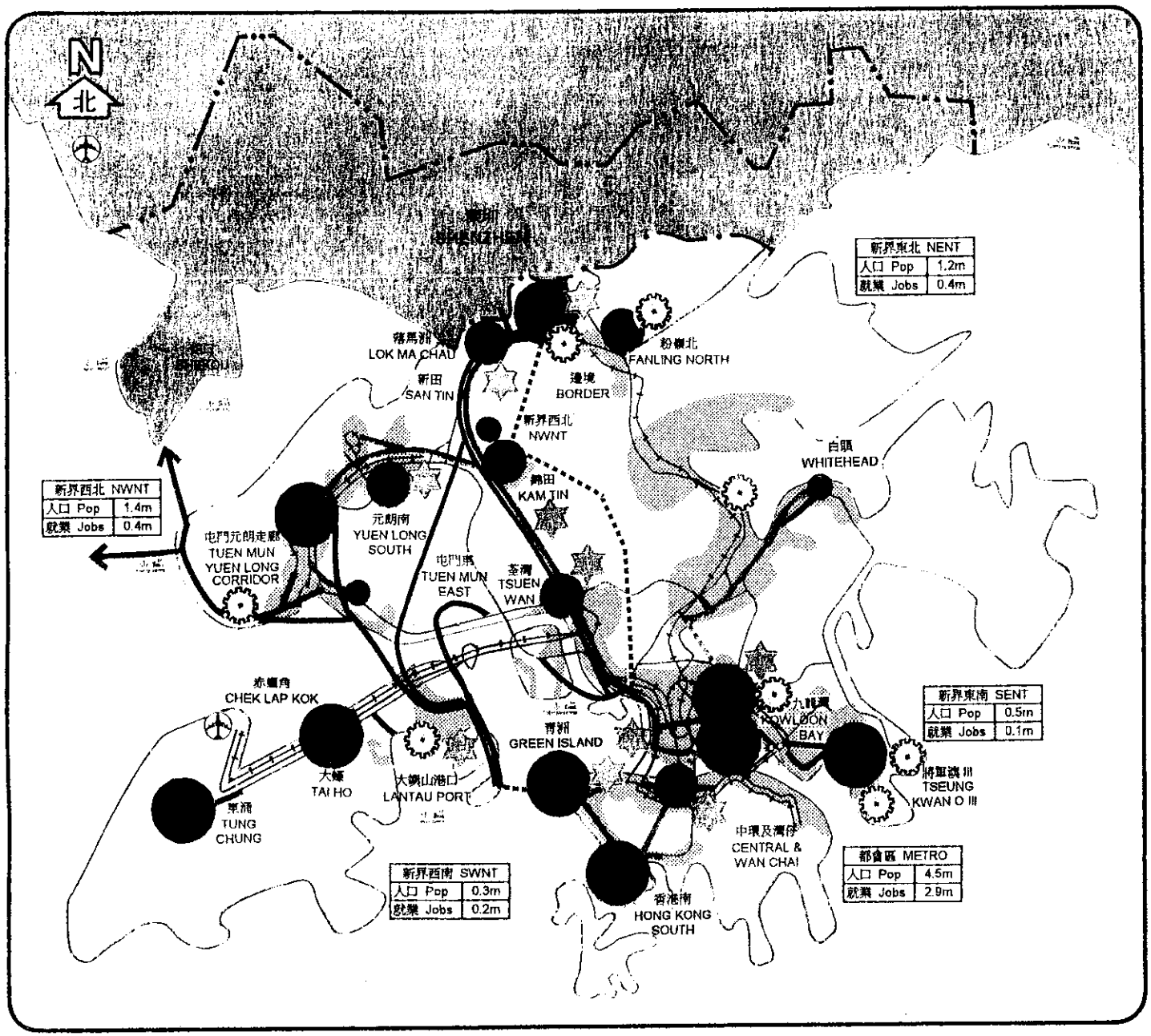
38. The following areas of improvement have been included built into the refinement process for the Prototype Preferred Options:

(a) review the likely growth of the fleet size of cars and goods vehicles and the practicality of strengthening the restraint policy in the light of the recent consultation exercise carried out by Transport Department;
(b) redistribute part of the commuting-oriented population in the NWNT to other sub-regions with spare infrastructural capacities;
(c) redistribute part of the office accommodation from the Metro area to the North-South technology corridor along the rail line in the NENT;
(d) addition of a new North-South highway from the Metro area to the Border, bypassing the congested Tsuen Wan - Kwai Tsing areas;
(e) scale down the industrial emissions and effluent discharges as a result of the relocation of manufacturing activities to the PRD; and
(f) review of the trip generation pattern of industrial traffic in the light of the current trend of economic restructuring.



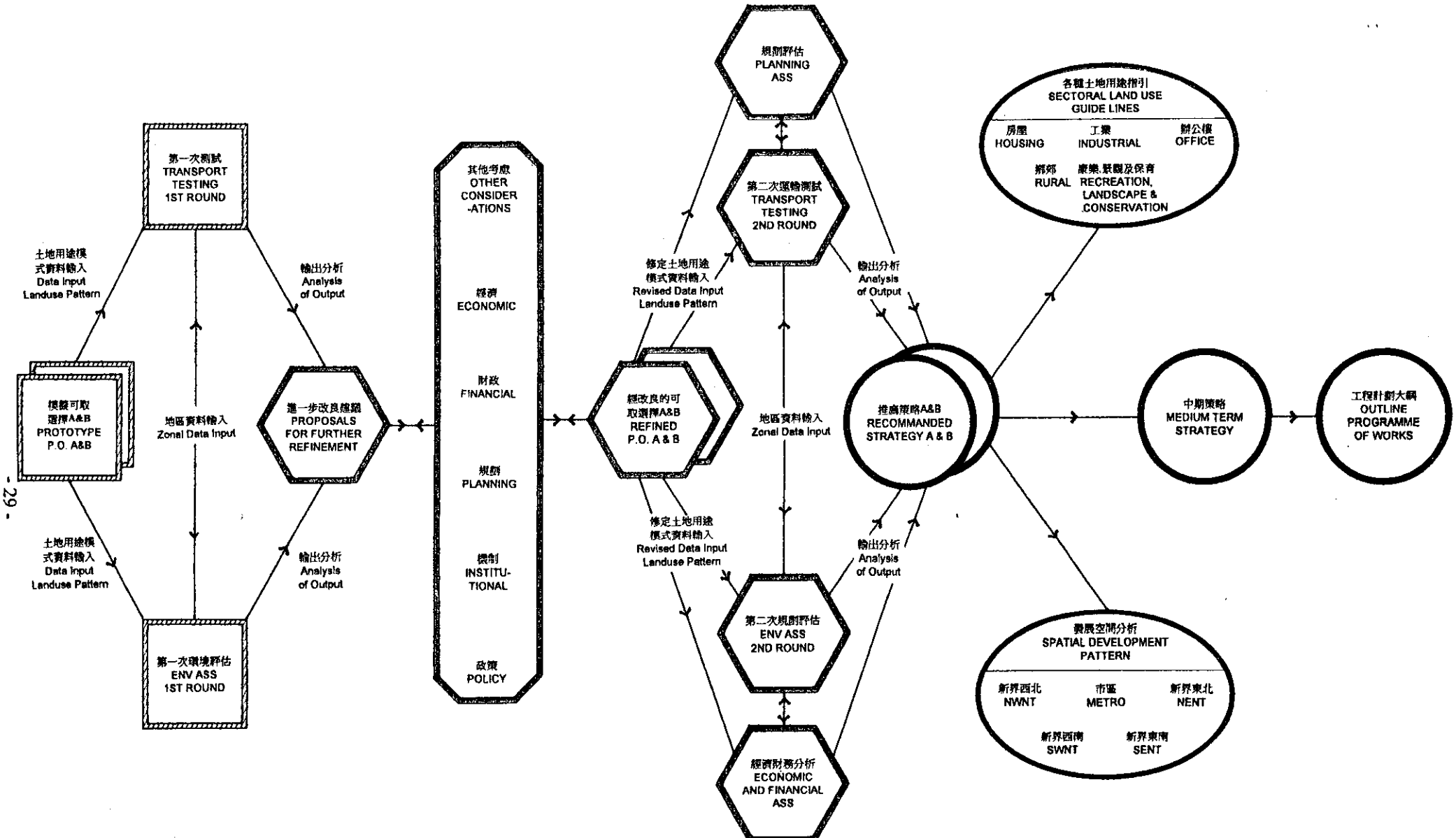
2011年原型可取選擇方案A之假設發展模式
AN ASSUMED DEVELOPMENT PATTERN FOR PROTOTYPE PREFERRED OPTION SCENARIO A BY 2011

4.1a



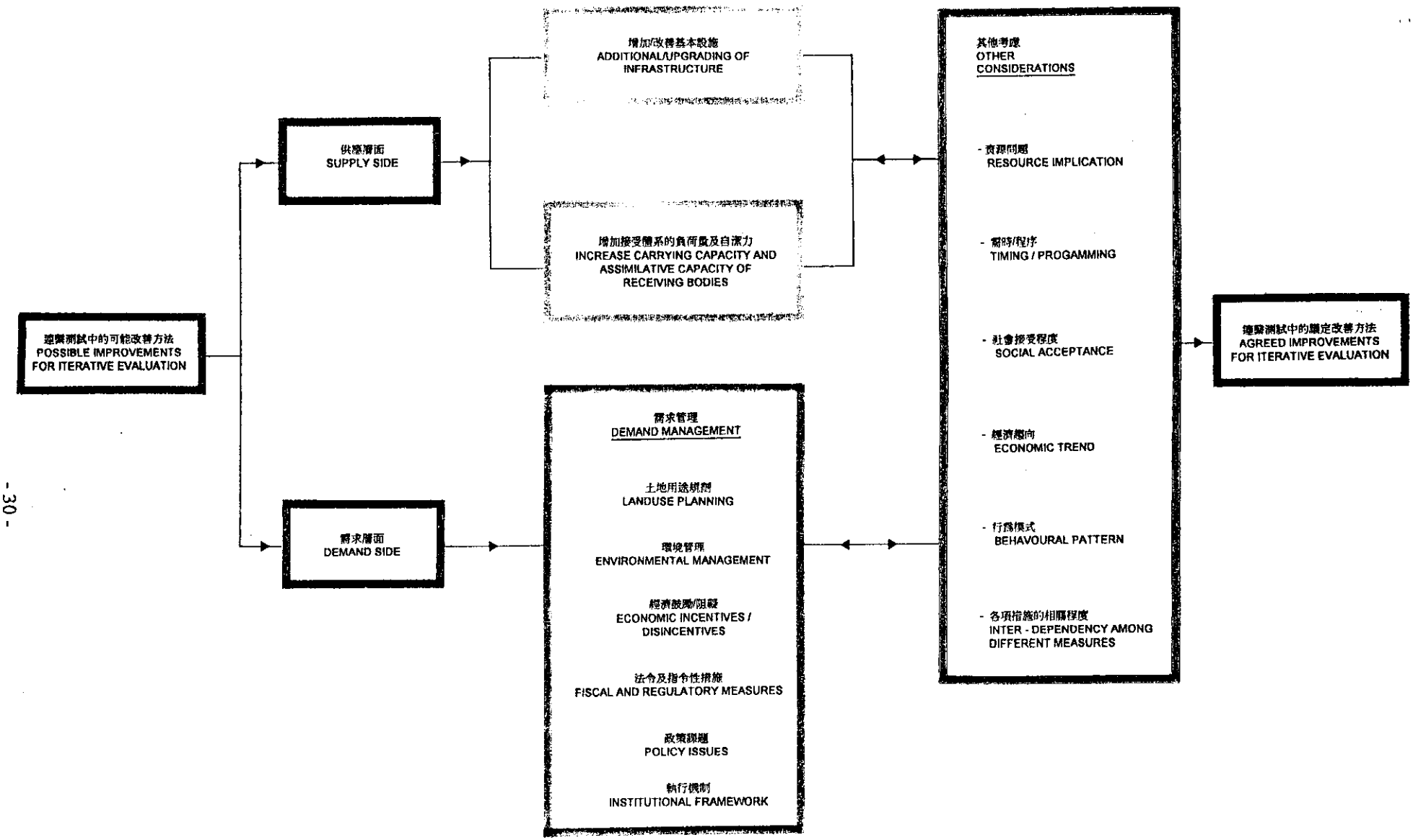
2011年原型可取選擇方案B之假設發展模式
AN ASSUMED DEVELOPMENT PATTERN FOR PROTOTYPE PREFERRED OPTION SCENARIO B BY 2011

4.1b



4.2

可取選擇的連擊式評審初步驟
EVALUATION PROCESS FOR TDS PREFERRED OPTIONS



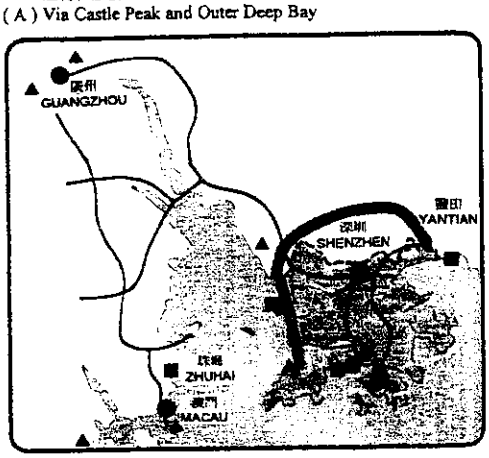
釐定改良可取選擇的步驟
PROCESS FOR ESTABLISHING OPPORTUNITIES FOR IMPROVEMENTS TO PREFERRED OPTIONS

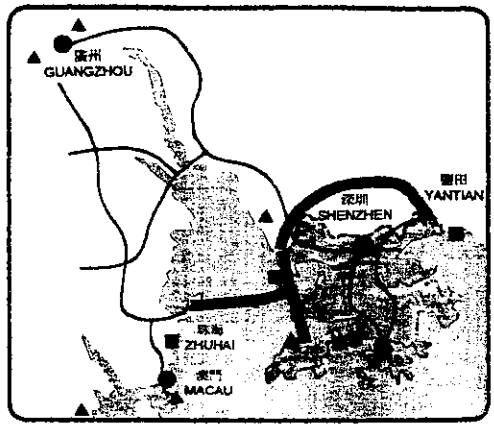
4.3

With No LPRC

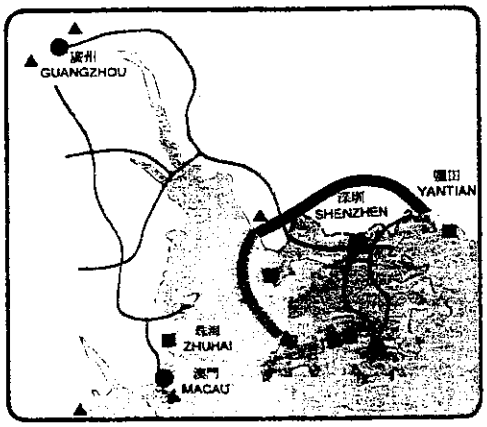
With LPRC

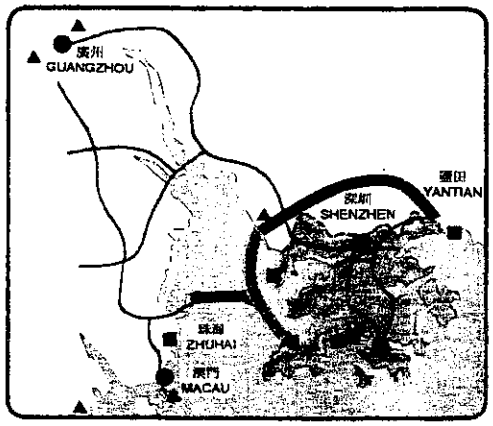
經青山及后海灣外圍
(A) Via Castle Peak and Outer Deep Bay



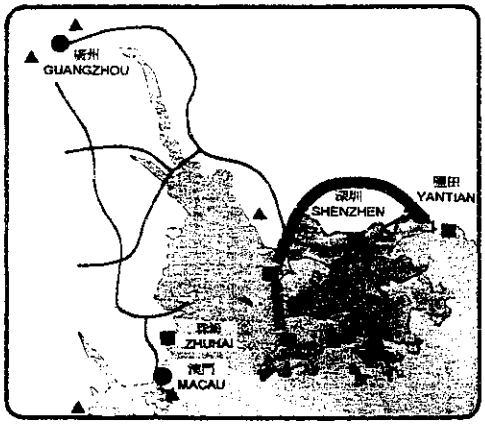


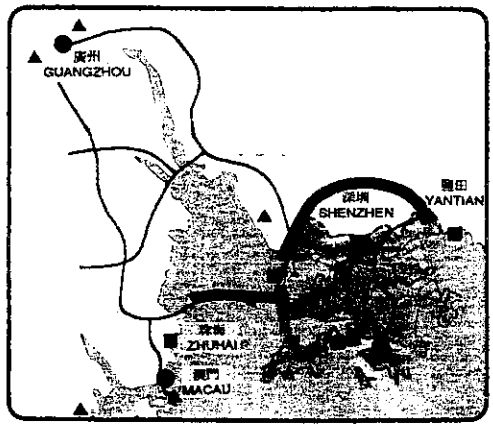
經內伶仃島
(B) Via Neilingding Island



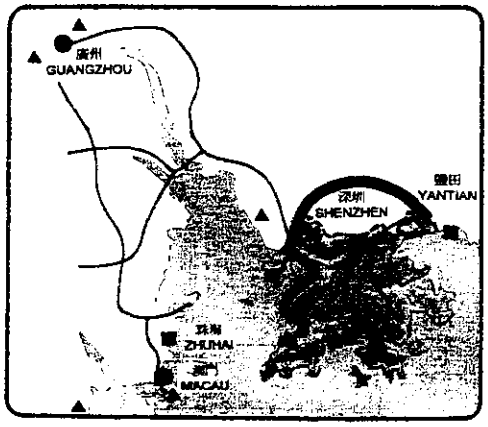


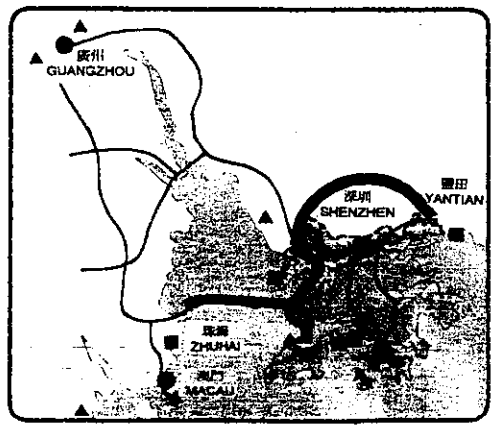
經龍鼓洲
(C) Via Lung Kwu Chau





經青山及后海灣內圍
(D) Via Castle Peak and Inner Deep Bay





圖例
LEGEND

機場
Airport

港口
Port

主要城市
Major Cities

珠江下游通道
Lower Pearl River Crossing

Y 幹線
Route Y

深圳繞道
Shenzhen Bypass

超級公路
Super Highway

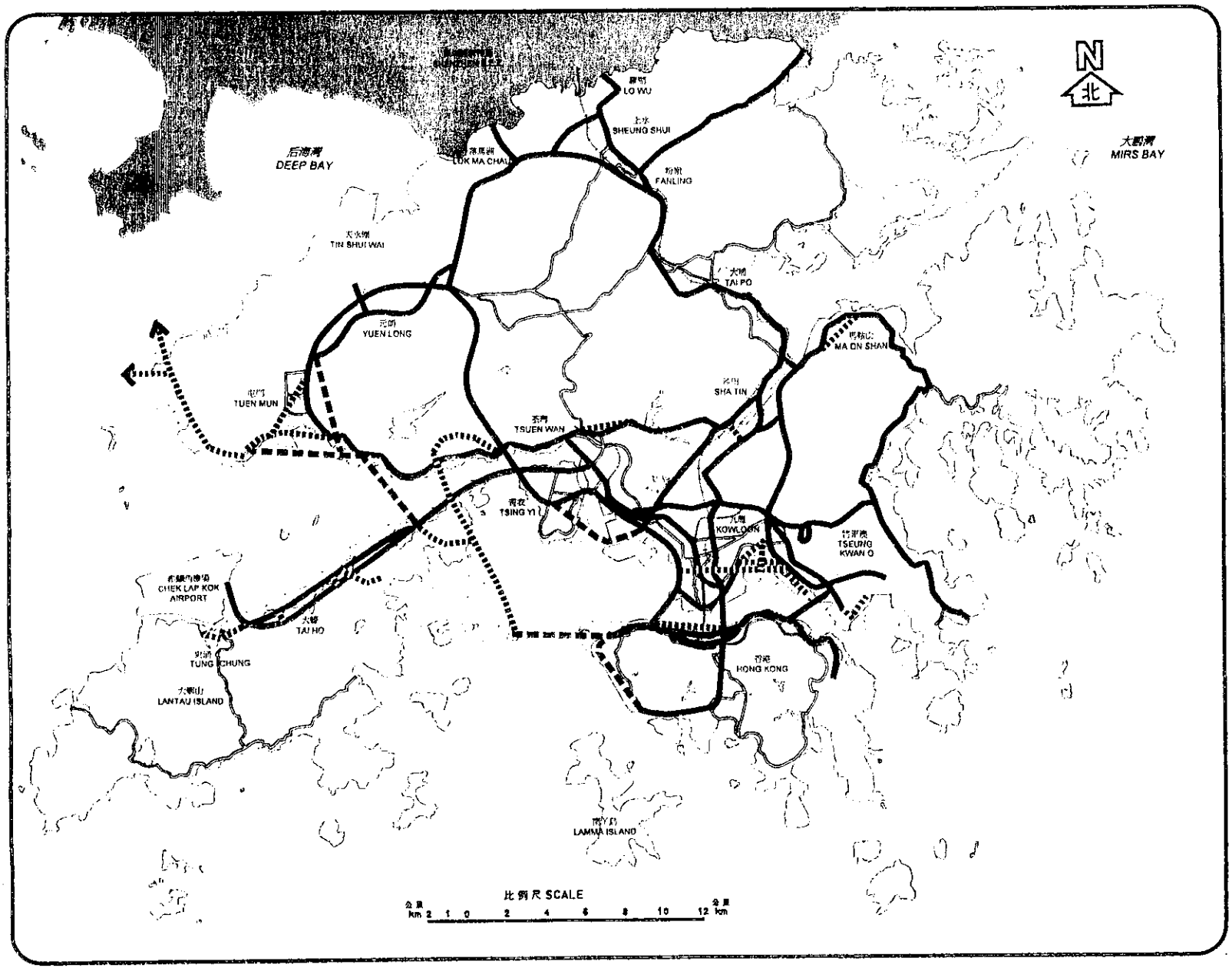
N
北

比例尺 SCALE

公里 km 20 0 20 40 60 80 公里 km

Y幹線之可行路線
OPTIONS FOR ROUTE Y

4.4



圖例
LEGEND

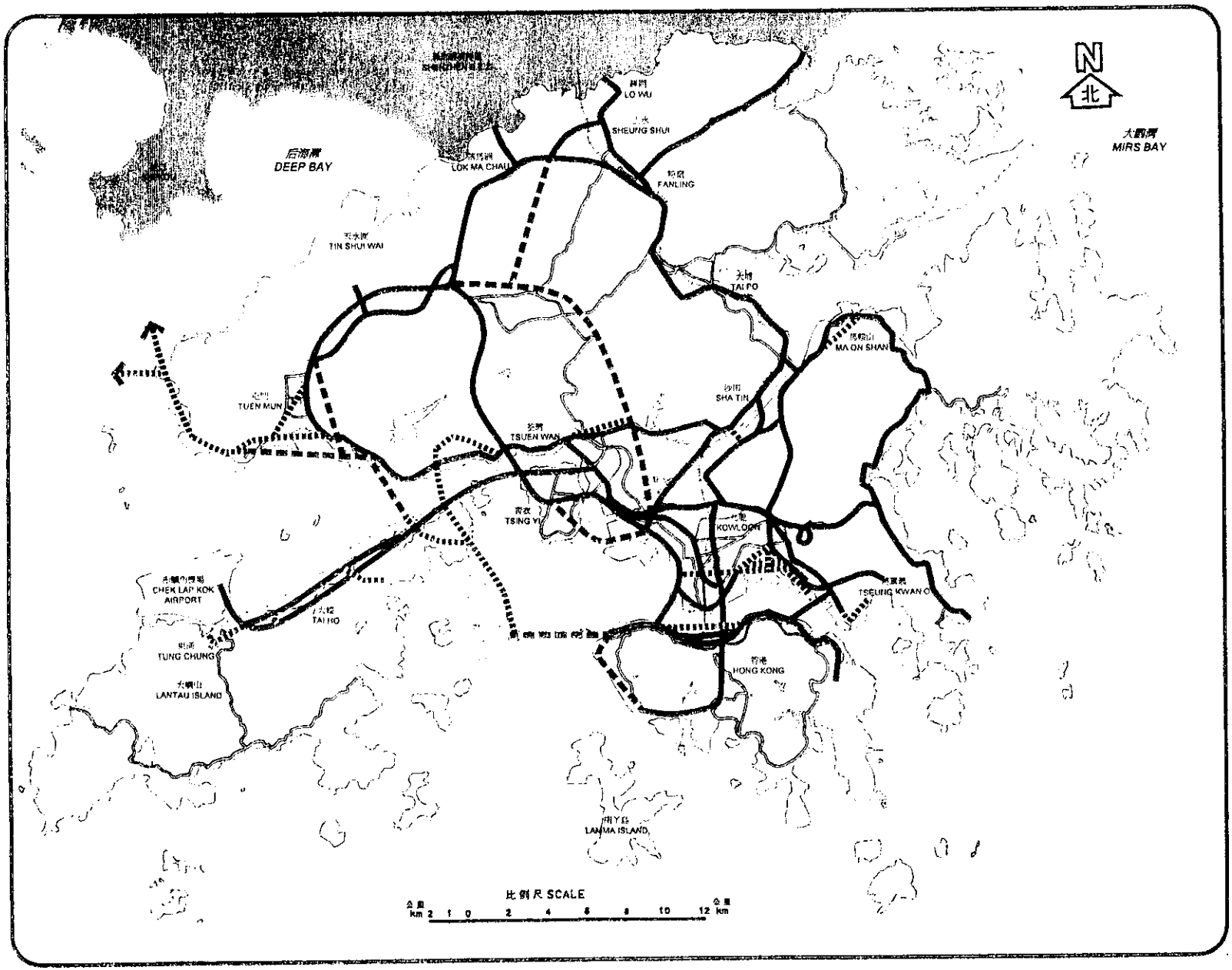
現有道路及在2001年前建成的項目
Existing Roads & Projects before/by 20

在2002-2006年建成的項目
Projects for 2002 - 2006

在2007-2011年建成的項目
Projects for 2007 - 2011

用作測試改進選定選擇的假設道路網絡(方案A)
HIGHWAY NETWORKS ASSUMED FOR TESTING REFINED PREFERRED OPTIONS (SCENARIO A)

4.5a



圖例
LEGEND

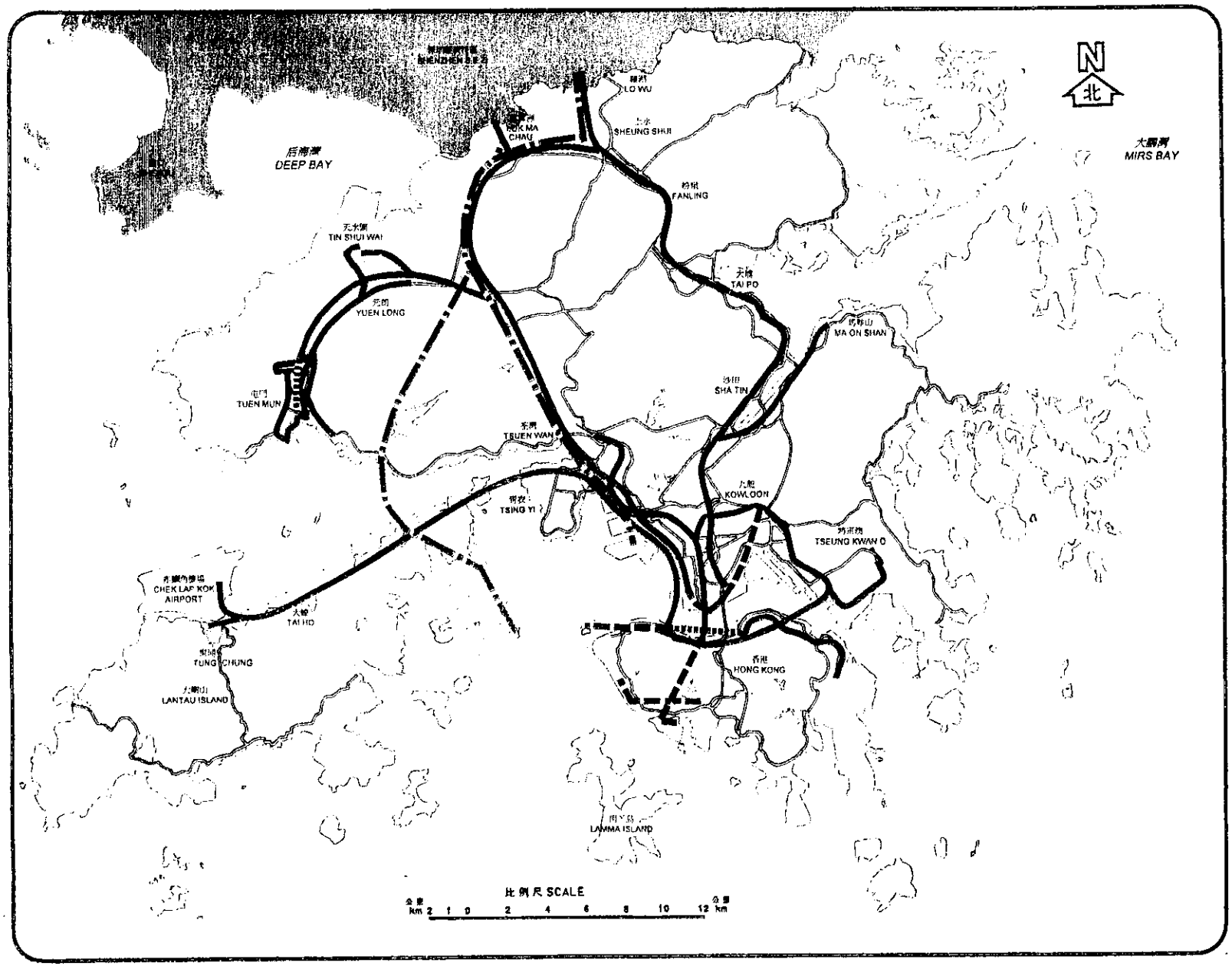
現有道路及在2001年前建成的項目
Existing Roads & Projects before/by 20

在2002-2006年建成的項目
Projects for 2002 - 2006

在2007-2011年建成的項目
Projects for 2007 - 2011

用作測試改進選定選擇的假設道路網絡(方案B)
HIGHWAY NETWORKS ASSUMED FOR TESTING REFINED PREFERRED OPTIONS (SCENARIO B)

4.5b



圖例
LEGEND

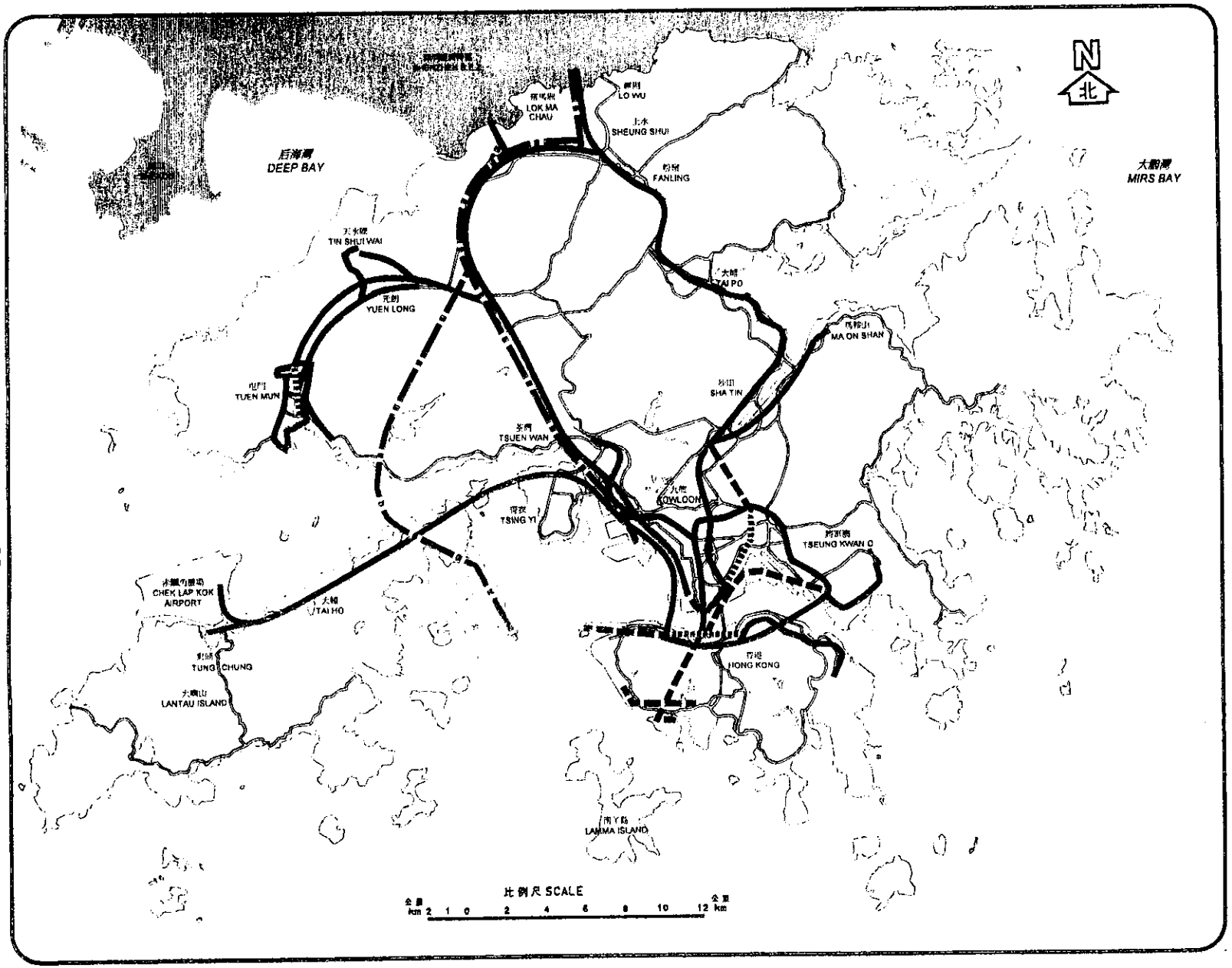
現有鐵路及在2001年前建成的項目
Existing Rails & Projects before/by 200

在2002-2006年建成的項目
Projects for 2002 - 2006

在2007-2011年建成的項目
Projects for 2007 - 2011

貨運鐵路線
Freight Rail Links

用作測試改進選定選擇的假設鐵路網絡(方案A)
RAIL NETWORKS ASSUMED FOR TESTING
REFINED PREFERRED OPTIONS (SCENARIO A)



圖例
LEGEND

現有鐵路及在2001年前建成的項目
Existing Rails & Projects before/by 2(

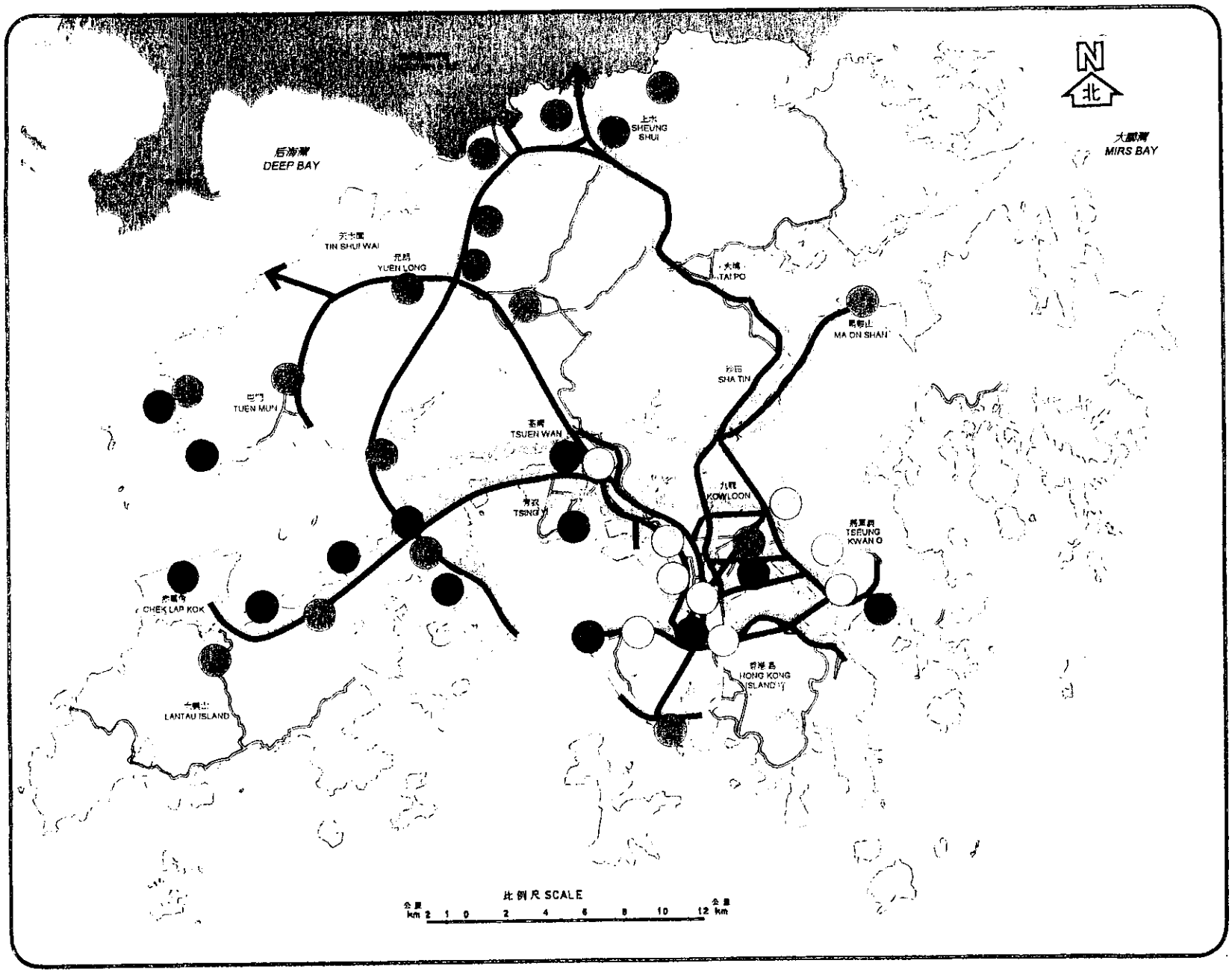
在2002-2006年建成的項目
Projects for 2002 - 2006

在2007-2011年建成的項目
Projects for 2007 - 2011

貨運鐵路線
Freight Rail Links

用作測試改進選定選擇的假設鐵路網絡(方案B)
RAIL NETWORKS ASSUMED FOR TESTING
REFINED PREFERRED OPTIONS (SCENARIO B)

4.6b



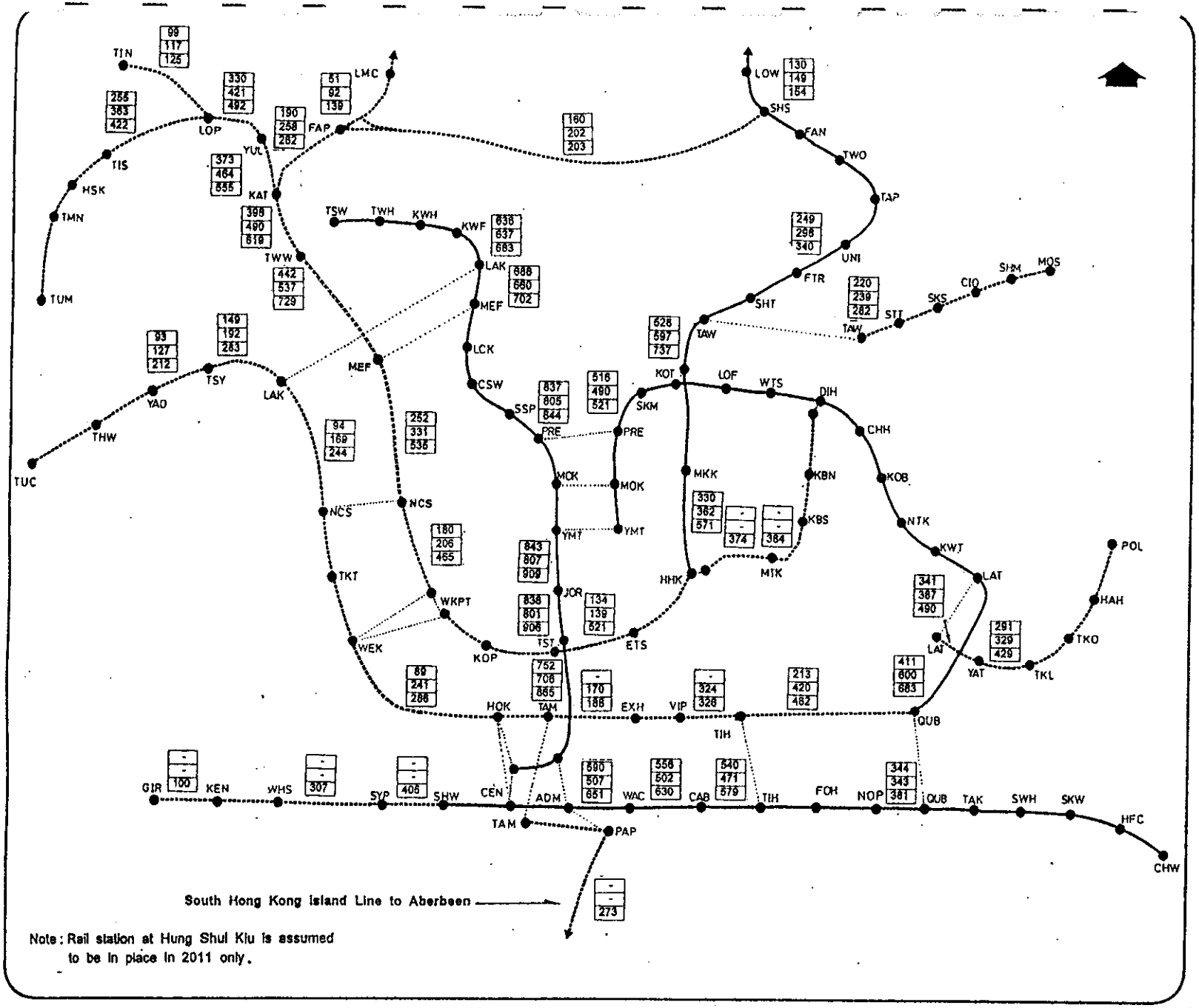
圖例
LEGEND

以填海爲主的發展區
Reclamation Based Areas

以拓展陸地爲主的發展區
Land-Based Areas

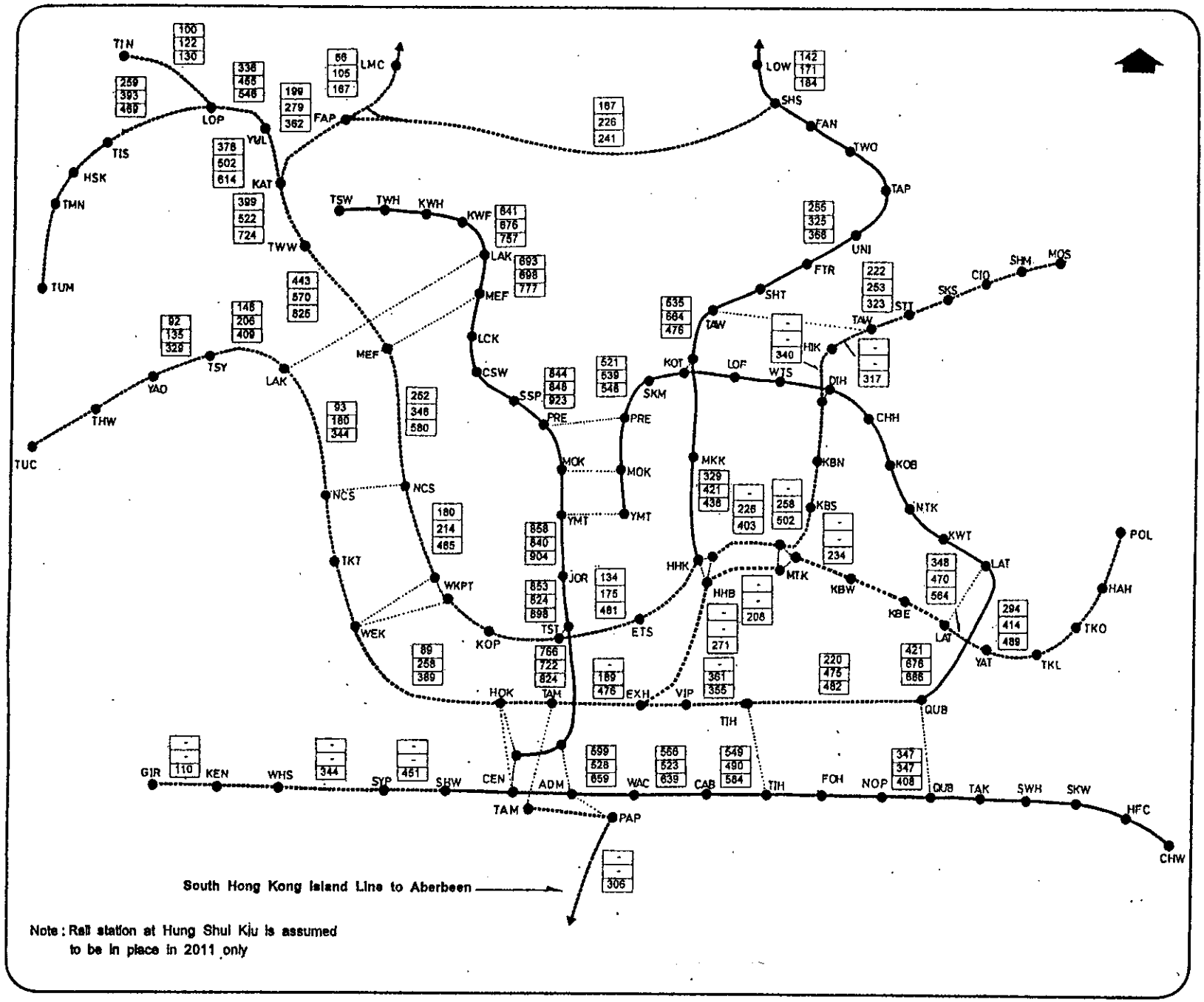
重建
Redevelopment

可能的策略性發展區
POTENTIAL STRATEGIC GROWTH AREAS



PROJECTED DAILY PATRONAGE ON MAJOR SECTIONS OF THE PASSENGER RAIL NETWORK FOR SCENARIO A OPTIONS

4.8



Note : Rail station at Hung Shui Kiu is assumed to be in place in 2011 only

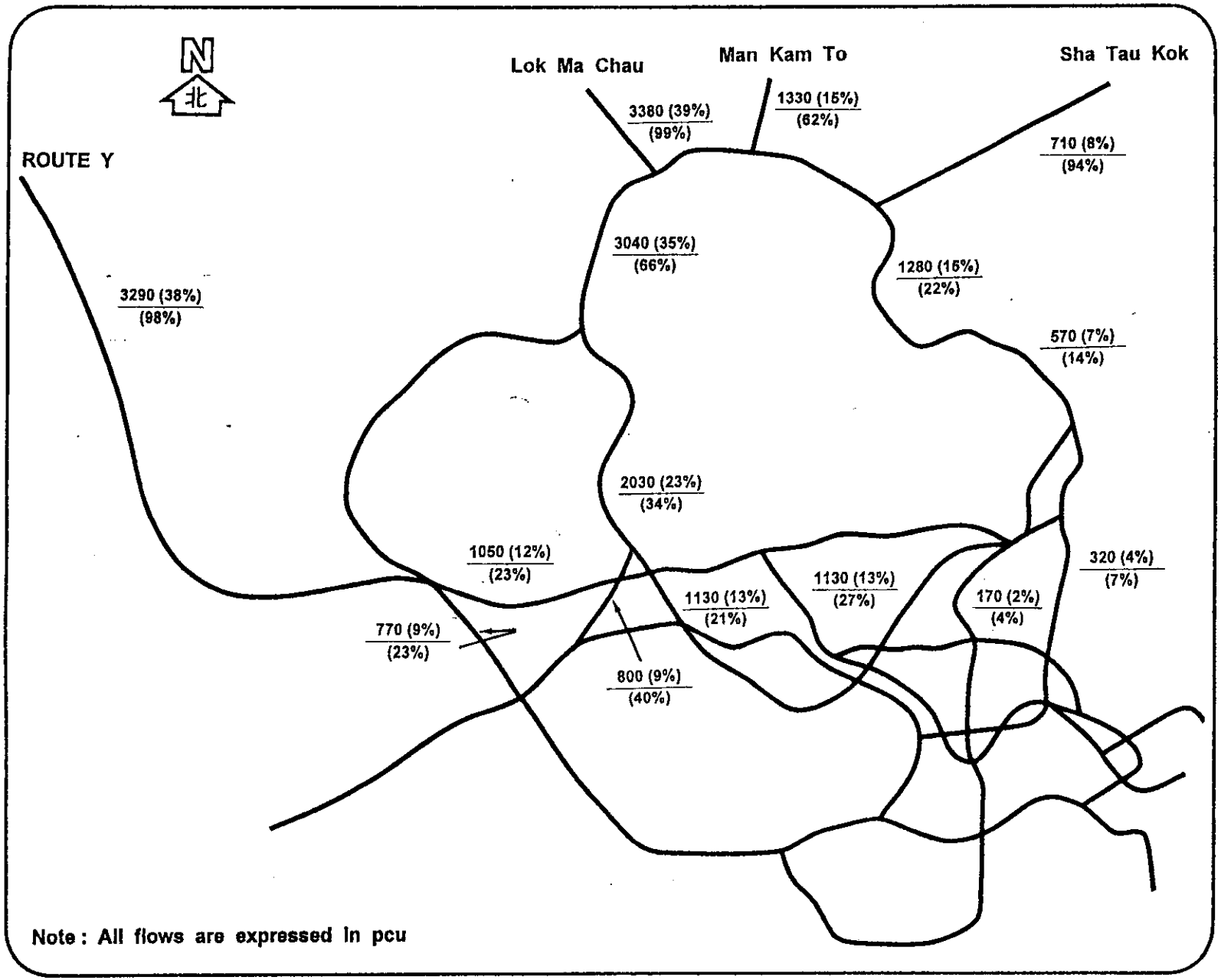
LEGEND:

- Existing & Committed Rail
- Planned / Proposed Rail
- Interchange Points

Daily Loadings (2-way, '000)	Year
145	2001
198	2006
284	2011

PROJECTED DAILY PATRONAGE ON MAJOR SECTIONS OF THE PASSENGER RAIL NETWORK FOR SCENARIO B OPTIONS

4.9



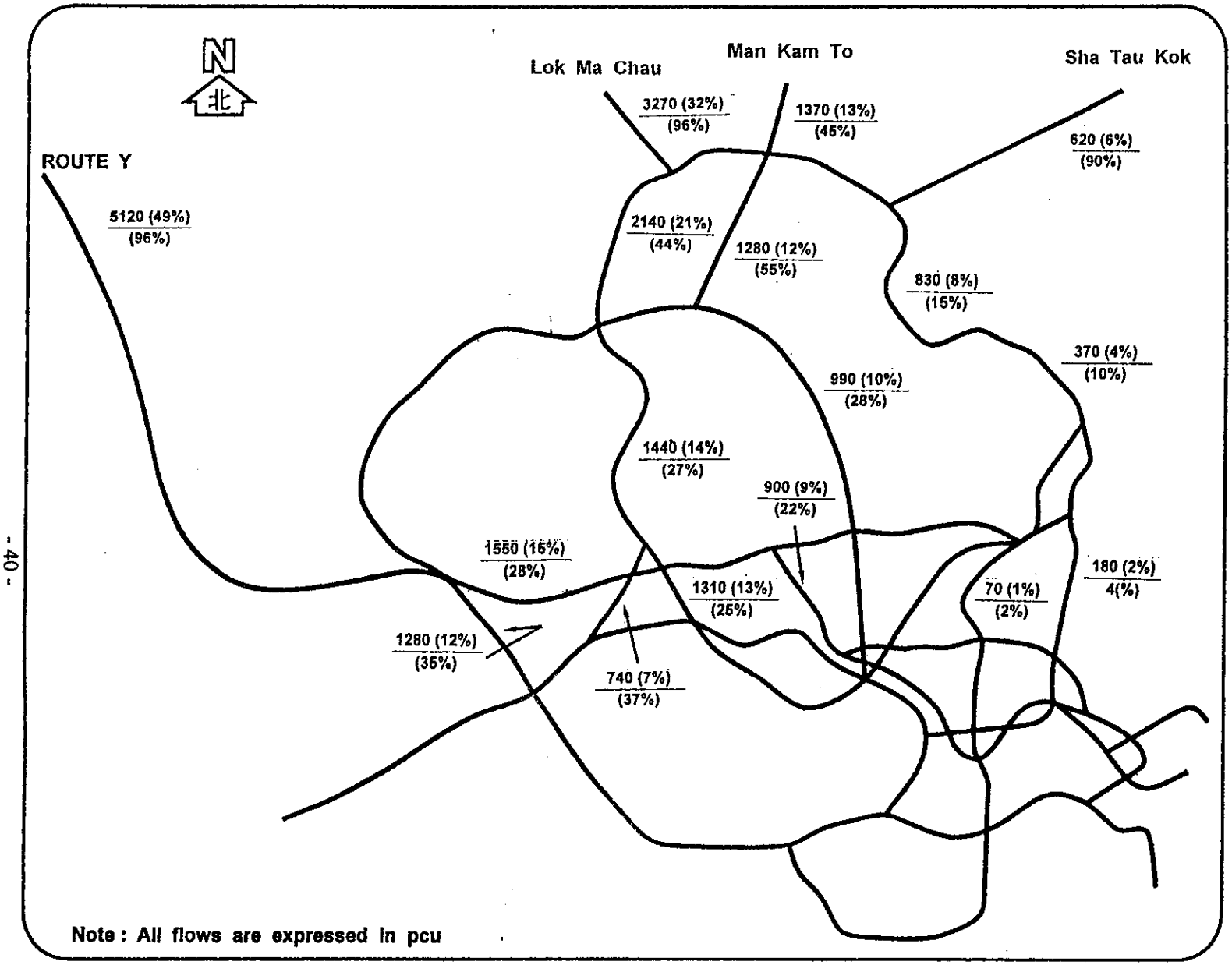
LEGEND :

3236 (31%) / (96%)

- X-Border Goods Vehicle F
- X-Border Goods Vehicle a Proportion of Total X-Bord Goods Vehicle Flow
- X-Border Goods Vehicle a Proportion of Total Road Traffic

CROSS BORDER GOODS VEHICLE FLOWS FOR SCENARIO A 2011 OPTION
(AM PEAK HOUR , 1-WAY SOUTHBOUND)

4.10



LEGEND :

5120 (49%) / (96%)

- X-Border Goods Vehicle Flow
- X-Border Goods Vehicle as Proportion of Total X-Border Goods Vehicle Flow
- X-Border Goods Vehicle as Proportion of Total Road Traffic

CROSS BORDER GOODS VEHICLE FLOWS FOR SCENARIO B 2011 OPTION
(AM PEAK HOUR , 1-WAY SOUTHBOUND)

4.11