Transport Strategies for the North West New Territories (NWNT)

August 2002

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PREFACE

This report presents a summary review of the issues and opportunities arising from the future strategic development of the North West New Territories (NWNT) and Lantau Island. This research was triggered by the recent controversy surrounding a number of major infrastructure projects within and linking Hong Kong to Mainland China, including new highways, railways, sea and air ports as well as logistics developments.

There is an urgent need to consider a more comprehensive planning framework for Hong Kong and the Pearl River Delta in the interests of Hong Kong, Guangdong Province and the Mainland as a whole. To this end, Civic Exchange (a non-profit think tank) initiated a preliminary technical review of the transport infrastructure projects related to the NWNT with the assistance of MVA Hong Kong Limited (transport consultants). The project also included a one-day interactive Workshop facilitated by The Quicksilver Group (held on 13 July 2002) and intended to bring together a wide range of views and ideas with the goal of providing perspective in the decision-making process. It is our hope that the technical review and the discussion between public and private sector representatives at the Workshop will help inform decision-making in the Hong Kong Special Administrative Region Government. With the introduction of the new Principal Officials Accountability System in July 2002, we feel that the time is opportune for a review of Hong Kong's transport policy.

This document provides a summary of current and planned transport infrastructure in the NWNT against the backdrop of the need to consider future development options for Hong Kong and the Pearl River Delta. We see this document and the Workshop findings as "work in progress" that the government may wish to consider in the overall planning process and hope to be able to make further contributions to government decision-making in the future. We also hope that this project and the information derived from it will be useful to the public, as increasing public participation in the deliberation of transport and planning issues is critical. The question of how Hong Kong and the Pearl River Delta should develop in the longer-term is perhaps the greatest challenge facing all of us.

The findings presented here are not prescriptive. Instead they outline a possible way forward and identify issues to be resolved before committing to strategies and developments that will have major effects on the physical, economic, environmental and social sustainability of Hong Kong and South China.

During the Workshop, it became clear that there was a great desire on the part of the stakeholder-participants, many of whom had specific expertise, to be involved in assessing various development options for Hong Kong and building consensus as to the way forward. We believe it would be beneficial for Hong Kong authorities as well as influential private sector bodies to organize and structure public gatherings in order to stimulate and capture the collective experience of Hong Kong people in identifying key issues and resolving conflict. To this end, Civic Exchange wishes to acknowledge The Quicksilver Group for sharing their highly effective facilitation methods on a pro bono basis and the technical support rendered by MVA. Civic Exchange would also like to thank Workshop participants for their valuable contribution to this project.

Civic Exchange
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1. BACKGROUND

The 1980s and early 1990s

1.1 The past 25 years have witnessed a huge change in the landscape of the North West New Territories (NWNT) and Lantau Island. In the early 1980s, that part of Hong Kong was a largely rural area with the market towns of Yuen Long and Kam Tin and a growing New Town in Tuen Mun. The government's NWNT Strategy published in 1982 (Figure 1.1) included plans for:

- Urban expansion at Yuen Long, Tin Shui Wai and Tuen Mun
- Corridor development between Yuen Long and Tuen Mun
- Conservation actions in the rural areas
- Route X (now Route 3 corridor)
- Railway links to the urban areas
- Light Rail Transit (LRT) for Tuen Mun-Yuen Long

1.2 At that time there was no commitment to an airport at Lantau Island – an option for an airport and port at Deep Bay were considered in preliminary form.

1.3 Subsequently, following the Port and Airport Development Study (PADS), a commitment was made to a new airport at Chek Lap Kok at Lantau Island with an associated New Town at Tung Chung, incremental port expansion at Kwai Chung and Tsing Yi with later expansion at North Lantau, and proposals for supporting road and rail infrastructure (Figure 1.2).

1.4 The need for such expansion was triggered by the capacity constraints at Kai Tak Airport and the Kwai Chung Basin in the face of strongly growing international passenger and cargo traffic.

1.5 During that period the Hong Kong economy was undergoing fundamental restructuring with the relocation of a large part of its manufacturing base to the Pearl River Delta (PRD), principally Shenzhen and Dongguan. That generated large cargo flows through Hong Kong Port (HKP), which in turn resulted in increasing road traffic volumes and the associated demand for land for container depots and related services, largely in the NWNT.

1.6 Even so, the strategic planning for Hong Kong had a largely domestic focus and Cross Boundary issues were not yet on the agenda.

2. SUSTAINABLE DEVELOPMENT

Economic Change

2.1 The seemingly unstoppable growth of Southeast and East Asia tailed off with the 1997-1999 Asian financial crisis. Hong Kong's concern today is that structural challenges are at play once more and they will eclipse short-term cyclical gains, such as those over the last year or so. Mainland China maintained strong economic growth (averaging around 8% GDP growth per annum in the period 1996-2000), underwritten by US$40 billion per year of Foreign Direct Investment since the mid-1990s (Figure 2.1). China's accession to the World Trade Organisation and the increasing openness and flexibility of its economy may well mean that it will begin to fulfil its potential as a major market in the region and take a leading role worldwide.

2.2 Guangdong Province and the PRD in particular, has been at the forefront of economic growth, accounting for 40% of Mainland trade at US$170 billion in 2001 (Figure 2.2). This economic success was initiated by the establishment of four Special Economic Zones (SEZ's) in the late 1970's – Shenzhen, Zhuhai, Xiamen and Shantou. In 1985, the whole of the PRD was designated as an Open Economic Zone. Early economic growth in the PRD was built around outward processing largely funded by Hong Kong manufacturers. More recently, the PRD economy has diversified into hi-tech manufacturing and tertiary industries such as property development, tourism and services, much of which has been funded by Hong Kong money.

2.3 Meanwhile Hong Kong has been going through a period of reassessment of its role as a leading city in South China and the region. The Hong Kong Special Administrative Region Government (HKSARG) has identified four pillars for sustainable growth in its 2002-2003 Budget:

- Financial Services
- Logistics
- Tourism
- Producer and Professional Services

2.4 Hong Kong has also struggled in these years to come to terms with its relationship with its Mainland neighbours and hinterland. Historically, Hong Kong has always had strong social and economic links with neighbouring Guangdong Province, the source of a large proportion of its population. The development of the PRD and Guangdong Province played a key role in Hong Kong's growth in the 1990s as a cargo base dependent on the Kwai Chung container port and Hong Kong's highly developed port related service industries. However, today the PRD is also a competitor for investment (Hong Kong's manufacturing industries having already relocated there) and is growing its own logistics and port industries as well as services, tourism and financial sectors.

2.5 A question of balance between cooperation and competition faces the Governments of the HKSAR and Guangdong as well as the Central Authorities. As Thomas P. Rohlen (Stanford's Institute of International Studies) aptly noted: "The government of very large metropolitan regions is always complex and messy,

but the Pearl River Delta region is on its way to becoming the most complex and messy. Though it is one of the most rapidly growing urban areas in the world, with enormous future potential, it desperately needs a system to manage and direct this dynamic growth. Hong Kong's future place as part of the Chinese economy will undoubtedly be defined by the way the Delta develops, and by the role Hong Kong assumes in shaping that development. The practical, technical problems and challenges are not difficult to grasp, but coordination and leadership remain problematic, daunting, and easily susceptible to mismanagement".

2.6 There are many issues involved in considering Hong Kong's integration with the PRD. On the one hand, there are parochial economic interests at risk (for example, retail and jobs) but on the other hand, there are also collective advantages in making the PRD region more competitive against other regions although these advantages are hard to calculate and perhaps even harder to sell politically. How to frame the deliberation in Hong Kong and with the authorities in the PRD is a real challenge to political leaders on both sides of the Boundary in the face of an array of short-term threats to various vested interests. It is recognized that the cities of the PRD have to a degree been encouraged to be entrepreneurial and consequently are highly competitive not just with Hong Kong but also with each other. This spirit has been a major factor in their success but it may well be time to consider collaboration when there is much competition coming from other regions in China as well as other parts of the developing world.

2.7 Relations between the authorities in Hong Kong and Guangdong have been unwieldy and have so far led to a relatively poor level of coordination in a fast-moving world. Whilst this report is not about the political and administrative issues involved, arriving at a joint vision and improved coordination are essential to safeguard the future of the region as a whole. There will be winners and losers in the process of integration as well as difficult adjustments to be made.

Trade

2.8 During the 1990s, Hong Kong's domestic exports fell, whilst imports largely for domestic consumption and development grew basically in line with the economy and population. In contrast, the outward-processing based growth of the PRD increased dramatically. Figure 2.3 shows these trends. These huge flows passed through Hong Kong as re-exports and accounted for a significant proportion of total trade.

2.9 The future prospects are for the PRD to continue to expand its role as one of the most efficient "manufacturing workshops of the world" and move to higher tech and value-added industries, with the more labour intensive production moving to lower cost parts of the Province or even outside Guangdong. Whilst Shenzhen and Dongguan will likely continue to prosper, the West Bank and Guangzhou will probably increasingly feature in export manufacturing. In addition, production for domestic consumption will grow with the economy and attract imports of materials and consumer goods (Figure 2.4). The PRD is China's wealthiest region to date.

Sustainable Transport

2.10 Economic projections from numerous institutions show that potential growth in trade volumes in the PRD could easily double and possibly even triple in the next 20 years, necessitating the corresponding development of transport and port infrastructure and associated services. The question is therefore how the PRD can use the concept of "sustainable development" to structure this growth. Sustainable development has been widely adopted as a legitimate planning goal worldwide. In essence, sustainable development focuses on improving and maintaining the quality of life for all members of a community without increasing the use of natural resources beyond the capacity of the natural environment to supply them indefinitely.

2.11 Although sustainable development initially focused on resource conservation, the concept has gradually evolved to include a wider range of issues, including transport. A transport system should be considered sustainable only if it meets two basic conditions: first, it must meet current needs for mobility without imposing unacceptable costs, including external costs (e.g., congestion, air and noise pollution), on those who use it and are affected by it; and second, it must be able to meet projected future needs for mobility at acceptable costs.

2.12 Therefore, sustainable transport may be defined as an evolving set of strategies designed to provide effective transport services, while keeping the internal and external costs of such services within acceptable limits.

2.13 For a more in depth discussion of the industrial potential of the PRD region, please refer to *Hong Kong SMEs – The Primer: Nimble and nifty – Transforming Hong Kong* (April 2002, published by CLSA Emerging Markets, www.civic-exchange.org). For an in depth discussion of sustainable transport, please see *Sustainable Transport in Hong Kong: Directions and Opportunities* (June 2002, www.civic-exchange.org).

3. PORT TRENDS

3.1 Hong Kong's container traffic is handled by four principal types of port facilities: Kwai Chung container port, mid-stream operations, river trade terminal and public cargo working areas. The main driving force for container trade in Hong Kong is ocean going containerised cargo. In the past, HKP had a unique role as the gateway to Mainland China and benefited greatly from the re-exports of Mainland cargo. However, in recent years other ports in the PRD have upgraded their infrastructure and streamlined their trading/customs procedures such that Hong Kong is now facing competition, particularly from Yantian and also Shekou ports in Shenzhen. In five short years, HKP's share of total Guangdong Province cargos has fallen from 95% to 68%, and recorded a small reduction in total throughput in 2001, while 1Q2002 saw Shenzhen ports throughput jump by 50% and HKP remaining approximately level (Figure 3.1). Official forecasts prepared as recently as 2000/2001 seriously underestimated the competitive impact of the Shenzhen ports, which have captured in 2002 the share forecast for 2006.

3.2 A regional port complex has developed in the PRD within which Hong Kong is searching for an enduring role (Figure 3.2). The boom in higher-end logistics and other trade related services (which are driven by the increasingly intense application of information and knowledge) suggests that although the Shenzhen ports may even overtake Hong Kong in terms of container volumes handled in longer-term future, Hong Kong can remain central to the system as a whole, as the provision of support services becomes as important as the loading and unloading of cargo. Possible scenarios of market prospects for HKP within the PRD region are illustrated in Figure 3.3 ranging from the threat of decline, to steady growth, to future growth on the back of port expansion and infrastructure links to the PRD hinterland.

3.3 The HKSARG is currently in the process of deciding what, if any, further port infrastructure and associated facilities are required in the next 10-20 years in Hong Kong. In 2001, the Port and Maritime Board (PMB) identified four sites for future container terminal development: West Tsing Yi, Tuen Mun, East Lantau and South Lantau.

- The Tsing Yi site provides an incremental expansion of the Kwai Chung Cargo Basin by maintaining a concentration of port activity in an already congested location. There is an additional issue. The whole of the Kwai Chung Cargo Basin area has become a part of the city creating operational constraints for port operation as well as considerable inconvenience and pollution for nearby residents. A key issue for Hong Kong to consider is whether it is desirable in the long term for the container port to remain so close to our heavy population centre. Moving the port away from Kwai Chung altogether is possible although considerable costs will be involved. However, the Kwai Chung area, being so well located, could provide substantial development potentials to off-set the overall costs.

- Tuen Mun provides excellent river and road access potential to the PRD but is dependent on sailing via the Ma Wan Channel or the proposed Tanggu Channel.

- South Lantau and East Lantau both offer potential for more unrestricted development nearer the deep water shipping channels but would involve substantial infrastructure costs. It needs to be noted here that East Lantau is unlikely to be viable with the Disney Theme Park being developed at Penny's Bay. It would make more sense for East Lantau to be designated a conservation and recreation area.

The PMB has since decided to defer all further container terminal development until at least 2008-2010, switching the emphasis to productivity improvements at Kwai Chung.

3.4 The HKSARG's stated policy objective is to strengthen Hong Kong's position as the "leading hub port in Southern China" as well as to enhance competitiveness for Hong Kong to become the "prominent international maritime center in Asia". The Economic Development Branch of the Economic Development and Labour Bureau is in the process of formulating a strategy for the port based on a new consultancy study to update the port cargo forecasts, quantify the impact of infrastructure development in South China so that the information can be fed into developing Hong Kong's plan, and recommend the best location for future container terminal development in Hong Kong (Hong Kong Port Master Plan 2020 Study). The HKSARG's objective is also for Hong Kong to be the "preferred international transportation and logistics hub in Asia". The Financial Secretary now chairs a Steering Committee on Logistics Development. The government has also set up the Logistics Development Council.

3.5 A previous study (McClier Report 2001) was done as a response to the emerging alternative lower cost transportation options provided in locations across the Boundary. That report made clear its preference for Hong Kong to do everything possible to ensure substantial quantities of Mainland China's physical trade passes through Hong Kong. We feel that the McClier Report's failure was that it did not consider other development options or the environmental considerations inherent in its recommendation. We believe that in preparing a new strategy, the HKSARG needs to examine the assumption that the best way for Hong Kong's future development is to try and capture the largest amount of China's physical cargo without doing the proper economic and environmental analysis of alternative options.

4. AIRPORT AND AIR TRAVEL TRENDS

4.1 The Hong Kong International Airport (HKIA) at Chek Lap Kok on Lantau Island is by far the best managed and the most efficient airport in China. Whilst container cargo through HKP has stagnated, air cargo has grown dramatically. The trend is that air cargo is expected to continue to show strong growth in the foreseeable future. Since it commenced operation in July 1998 passenger throughput at HKIA has grown from 28.5 to 34 million passengers per year, but along the way suffered from the Asian economic recession and the effects of the September 11 tragedy in the USA. HKIA still depends to a large degree on travel originating in or destined for Hong Kong, but has increased its role as an air hub particularly into the Mainland. With the completion of the second runway and expansion of the Passenger Terminal Building, HKIA now provides a passenger handling capacity of 44 million per year and a cargo handling capacity of 3 million tonnes per year. (Figure 4.1)

4.2 The airport has access restricted to a single corridor and is in effect at the end of a cul de sac. Road access is via the Tsing Ma Bridge and the North Lantau Expressway, which provide connections to Route 3 north towards the Boundary and south to the Metropolitan Area of Kowloon and Hong Kong Island. Rail access is via the Airport Railway providing links to the Metropolitan Area. There are no direct rail links to the PRD or road or rail links to nearby Tuen Mun.

4.3 Aside from HKIA, there are four other designated international airports in the PRD region: Guangzhou Baiyun Airport, Shenzhen Huangtian Airport, Zhuhai Airport and Macau Airport (Figure 4.2). Collectively, they handled 23 million passenger movements in the year 2000, with Guangzhou being the busiest of the four. A new airport for Guangzhou is under construction at Huadu 30km north of the city and is anticipated to also be developed as a time-critical logistics hub. The existing Baiyun airport will be closed and redeveloped.

4.4 HKIA has a quoted ultimate design capacity of 87 million passengers and 9 million tonnes of cargo a year. With annual passenger throughput expected to grow at a rate 5%-6% per year and cargo movements expected to grow by at least 6% per year, the Airport Authority (AA) has formulated a revised Master Plan to ensure that the design capacities can be met. The Master Plan makes provision for further expansion of the existing Passenger Terminal Building and the provision of additional aircraft stands in the midfield area (Figure 4.3).

4.5 Cargo is of fundamental importance to the success of HKIA. In the year to January 2002, it was one of the two busiest airports in the world for cargo movements. Around 70% of its cargo is sourced from the PRD. In 2001, the marine cargo terminal opened and now connects HKIA to 20 ports in the PRD. An on-airport logistics centre is due to commence operation in 2003 to process time-critical cargo. Furthermore, a logistics park is to be developed in North Lantau in close proximity to HKIA to target high-value and time-sensitive projects.

4.6 The HKIA's Master Plan is also seeking to enhance the share of non-aeronautical revenues through the establishment of a 24-hour "Sky City". That development will comprise a mixed land-use commercial area ultimately providing some 1 million m^2 of floor space. Key components of the development will include an international exhibition centre, a large office/retail development and a cross-boundary passenger ferry terminal.

4.7 The AA is proactively expanding its passenger and freight catchment area. There are already some 160 departures per day by bus linking HKIA to the PRD carrying 1.6 million passengers per year. High-speed ferry links are expected to commence shortly creating more connections between HKIA and the PRD. The AA has also initiated an agreement amongst the five airports of the PRD to explore possibilities of multilateral and bilateral cooperation, for example, enhancing the connectivity between airports by air, land and sea links.

4.8 There are infrastructure projects under consideration that will impact the HKIA. The Tuen Mun-Chek Lap Kok Link discussed in the next section of this report could provide a new road and possibly rail link, with onward links to the Shenzhen Western Corridor across Deep Bay. There are also proposals for Trans-Pearl River roads linking the West Bank of the Pearl River and beyond (Figure 4.4). Such links would consolidate HKIA as the leading airport for PRD estuary and environs, with the new Airport at Guangzhou complementing it by serving the Provincial capital, north PRD and the rest of Guangdong.

5. HKSAR INFRASTRUCTURE DEVELOPMENT

Highways

5.1 The existing, committed and potential strategic highways in Hong Kong are illustrated in Figure 5.1. The NWNT is currently linked to the Metropolitan Area by the Route 3 Expressway and Tuen Mun Road; and to Lantau by the Tsing Ma Bridge and North Lantau Expressway. The existing Tuen Mun Road between Tsuen Wan and Tuen Mun is particularly prone to congestion during peak periods and carries some 100,000 vehicles per day of which more than half are trucks and buses.

5.2 On the other hand, the Country Park Section of Route 3 (which is tolled) linking Tsuen Wan/Tsing Yi to Yuen Long is currently very much under-utilised with traffic preferring (toll free) Tuen Mun Road or Tolo Highway. Drivers are clearly unwilling to pay the toll even though using Route 3 would save them a lot of time. Under current demand levels the Tsing Ma Bridge and North Lantau Expressway are operating at only 30%-40% of capacity. Projections show that it will be some time before these highway capacities are reached. There is no scope for widening the Tsing Ma Bridge.

5.3 A number of new highway infrastructure schemes are planned for the NWNT although with the exception of the Deep Bay Link none are firmly committed (Figure 5.2).

Deep Bay Link – a dual three-lane expressway, connecting the future Shenzhen Western Corridor to the Yuen Long Highway in the Western New Territories, scheduled for completion in 2006.

Route 10 North Lantau to Yuen Long Highway – the original Route 10 was designed to run also to Hong Kong Island but that section has been dropped. Route 10 was initially designed to serve new container ports in the eastern part of Lantau Island, which is now unlikely to proceed with the Disney Theme Park sited at Penny's Bay. The current Route 10 is a dual three-lane expressway extending from North Lantau to meet Yuen Long Highway at the interchange with the future Deep Bay Link. This highway would provide an alternative road link to Lantau and HKIA as well as providing additional capacity for cross-boundary and movements to/from the NWNT.

The first stages, the So Kwun Wat Link and Tsing Lung Tau Bridge, gazetted in summer 2002, are seen by the HKSARG as urgent in order to provide a second link to Lantau Island and are slated for 2008 completion. The proposed eastern extension to the Ting Kau Bridge known as the Sham Tseng Tunnel is also planned for completion around 2008 whilst the Northern Section to Yuen Long Highway may be triggered by future traffic needs. These two links are still under design planning. The original Route 10 scheme received a considerable number of objections, and was subsequently divided into shorter sections and substantially revised.

Tuen Mun-Chek Lap Kok Link – a dual two/three lane road tunnel providing a direct link between HKIA and the Tuen Mun area, has previously been considered in the HKSARG's Comprehensive Transport Study 3

(CTS-3 2000) but was defined as only being required under high traffic growth scenarios by around 2016. This facility would provide a second and direct connection to HKIA, link it to Tuen Mun and onwards to the committed new Boundary crossing, the Shenzhen Western Corridor.

East-West Route – a dual three-lane highway across the central part of the New Territories linking Yuen Long and Tai Po/Sha Tin, may be required as early as 2011 according to the HKSARG under high growth scenarios but more likely by around 2016.

5.4 Furthermore, key planning/infrastructure changes in the past few years have called into question some of the government's highway infrastructure planning for the NWNT. These changes include:

- Development of the Disney Theme Park on Lantau Island.
- Uncertainty regarding the need for, or the timing of, as well as the location of future port facilities in Hong Kong.
- Development of HKIA as a passenger and logistics hub for the PRD and beyond.
- Redistribution of future population to the New Territories.
- Abandonment of Route 10's original Hong Kong to Lantau Link, and significant modification of the original Route 10 North Lantau-Yuen Long Highway scheme.
- Modification of Deep Bay Link scheme to include investigation of easterly links to Route 3.
- The uneconomic use of existing infrastructure due to the mix of free and tolled facilities.
- The need for or timing of additional road capacity to the Metropolitan Area. The government's "trigger" for road building is to build new roads when peak hour congestion arises - a policy considered uneconomic in other jurisdictions.

Efficient Use of Roads

5.5 Figure 5.3 illustrates forecast traffic growth based on recent government assumptions for the screenline drawn across the New Territories. It is evident that on a daily basis there exists substantial spare capacity for a number of years given current committed infrastructure. All traffic forecasts are either derived from existing traffic data or based on MVA projections.

5.6 However, at the present time the road system in the NWNT is not being used to its optimum economic efficiency. Route 3 providing about one third of road capacity into the Metropolitan Area currently carries only one sixth of the traffic. Meanwhile Tuen Mun Road is at or near capacity and Tolo Highway is now being widened in advance of the completion of Route 9, a dual three-lane tunnel link between Shatin and West Kowloon in 2007. The planned Route 10 would provide further capacity to the Metropolitan Area but its usefulness has been called into question since the downstream roads through Tsuen Wan and Tsing Yi provide less capacity. A preliminary calculation indicates the economic cost of the under-use of Route 3 in terms of excess journey times,

fuel consumption, wear and tear, accident costs etc. amounts to over HK$1 billion per annum in present day terms. This compares with annual toll revenues of HK$400 million.

5.7 Expenditure is already being made on Tolo Highway and is committed on Route 9, and is under planning for Route 10, which will parallel Route 3. No clear announcements have been made on the tolls, if any, to be charged on Route 9 and Route 10. The HKSARG reassessed Electronic Road Pricing and shelved it for a second time in 2001. The current uneven use of existing infrastructure and the decisions on further investment when facilities are under-used need to be rationalised under a proper transport policy framework. Proposals have been made for a Toll Authority or for the government wholly or partially taking over toll companies.

5.8 A set of possible toll charging cordons is shown in Figure 5.4 for all roads leading into Kowloon. The existing roads are currently a mixture of toll free public roads, low charged tolled government tunnels and commercially charged tolled private tunnels. Averaging the charges across all roads would give a car toll of just over HK$5 compared to a range from zero to HK$22 today. Traffic could then distribute itself in the most economic manner.

5.9 This raises the question of what is the government's policy objective of tolling: for example, is it to (a) raise revenues for the public purse; (b) recover transport investment; (c) pay for the toll facilities; (d) outsource capital investment; or (e) earn investment returns? Clearly the present mixed approach is sub-optimal economically. The current confusing approach brings forward capital expenditure, does not generate levels of returns normally expected by the private sector, and puts unnecessary strain on the environment.

Railways

5.10 The existing, committed and future railways in Hong Kong are illustrated in Figure 5.5. At present, the Airport Express and Tung Chung Line links HKIA and Tung Chung New Town to the Metropolitan Area. The NWNT is not currently linked by rail to the Metropolitan Area. The Kowloon Canton Railway Corporation's Light Rail Transit (KCRC LRT) serves local travel in the Tuen Mun/Tin Shui Wai/Yuen Long area. The West Rail (Phase I) will link West Kowloon to Tsuen Wan, Yuen Long and Tuen Mun and is due for completion in late 2003, when the LRT will also provide a feeder role.

5.11 Further rail links are planned to serve the NWNT, although these are currently regarded as longer-term aspirations and no commitment has yet been made. These include:

Northern Links – connecting West Rail to the northern end of East Rail and the planned Sheung Shui-Lok Ma Chau Rail Boundary Crossing is proposed for implementation between 2011 and 2016 in the government's Railway Development Strategy 2000 (RDS-2).

Regional Express Line – would form a new high-speed inter-city corridor between the boundary crossing at Lo Wu and Hung Hom, allowing through train services

to bypass East Rail and potentially allowing fast commuter services between the northern New Territories and Kowloon. The exact corridor and links on the Mainland side are subject to further study.

Chek Lap Kok Rail Link – would connect the NWNT to HKIA for passengers and freight, and could link the Airport Express Line / Tung Chung Line to West Rail, as well as provide a freight link to a new port if situated in South Lantau. Direct fast rail links into the PRD could also be considered.

Deep Bay Link – a high speed or commuter line connection across Deep Bay linking NWNT to Shekou area and into the Mainland railway system was studied in RDS-2 as a long-term possibility.

Introducing New Rail Modes

5.12 The KCRC LRT system is an environmentally friendly transport mode serving the NWNT. It is regrettable that the LRT, which carries 350,000 passengers per day, has not attracted the applause it deserves as a sustainable transport mode largely due to financial performance and unfair criticism of its safety. A number of proposals for urban development "off line" from the future West Rail could also benefit from electric transport systems. These include LRT extensions, Automatic Guideway Systems and People Movers (Figures 5.6 and 5.7).

5.13 A difficulty facing such schemes is the viability criteria applied under current government policy, which requires full cost recovery for rail infrastructure. In other jurisdictions (e.g., Europe, Australia, Singapore) all or part of the infrastructure costs are treated as "public works" and separated from the service related costs (rolling stock, stations, operating costs). The project is then tendered out on a commercial basis with the project sponsor only responsible for the service costs and replacement costs, with many variants in financial structures.

5.14 Such an approach could facilitate the introduction of new electric transport systems as well as expanding the rail system generally and further relieve the roads of traffic promoting sustainable transport for Hong Kong and the region as a whole. Thus, there is urgency for the HKSARG to review its rail financing system if it wants to fulfill its stated goal to build a rail-led transport system in the future. For a detailed discussion on road vs. rail financing see Civic Exchange's report *Sustainable Transport in Hong Kong: Directions and Opportunities* (June 2002, www.civic-exchange.org).

6. CROSS-BOUNDARY TRANSPORT NETWORK

Highways

6.1 There are currently three crossing points connecting Hong Kong's highway network with the rest of the PRD (Figure 6.1). These are at Lok Ma Chau, Man Kam To and Sha Tau Kok, all between the land boundary of Hong Kong and Shenzhen. By far the busiest of these is Lok Ma Chau which accounts for 70% of cross boundary vehicular traffic and 77% of container trucks. Man Kam To and Sha Tau Kok carry 22% and 8% respectively of vehicle crossings.

6.2 Lok Ma Chau is the most strategically located giving direct access to the Guangzhou-Shenzhen and Guanlan Expressways on the west side of Shenzhen. Man Kam To links directly into the centre of Lo Wu placing adverse traffic and environmental impacts on the city streets. Sha Tau Kok is currently lightly used and links through to Yantian and to Lo Wu via a road tunnel. Lok Ma Chau has the highest capacity but all three crossings come under heavy pressure at peak times resulting in long delays to traffic, in particular container trucks en-route to/from HKP.

6.3 A new dual three-lane road link, the Shenzhen Western Corridor, between the NWNT and Shekou in western Shenzhen, will provide the fourth road crossing between Hong Kong and Shenzhen by 2005-2006. It is anticipated that the Shenzhen Western Corridor will result in a westward shift of cross-boundary movements. Such a shift has the potential to provide a great stimulus to the NWNT, Lantau Island and HKIA. However, strategic highway capacity on the Hong Kong side beyond the Deep Bay Link must also be upgraded to ensure that there is no capacity shortfall, which would hinder development or create adverse environmental impacts.

6.4 In the longer term there are ambitious plans to link the two banks of the Pearl River. The Lingdingyang Bridge, which has already been investigated at a preliminary level, would connect the Hong Kong at a point west of Tuen Mun to the north of the Zhuhai. Another proposal put forward is to link both Zhuhai and Macau to the western tip of Lantau as part of a major port and logistics development strategy. The project proponent argues that such a crossing could help to stimulate growth on the less developed west bank of the Pearl River. If built, it could fundamentally alter travel patterns in that part of the PRD.

6.5 In the past 20 years, the highway network in Guangdong Province has expanded to include a growing network of expressway and national roads facilitating economic growth and movement of people and goods. In neighbouring Shenzhen, a hierarchical road network has been developed on an east-west grid in the corridor between the Boundary and the hills behind. Lo Wu is heavily trafficked and under ATC and modern traffic management. Traffic distribution in Shenzhen needs to be taken into account when considering Boundary crossings and also network planning in Hong Kong. Figure 6.2 shows the planned expansion of the PRD strategic highway network in the next ten years.

6.6 Future traffic volumes across the Boundary are dependent on a number of factors.

- Growth in port related, largely Guangdong Province sourced, re-exports utilising HKP. These volumes are dependent on the overall trade volumes and the ability of HKP to compete with Shenzhen and South China ports.
- Transport policy on licencing bus and coach services and relative modal choice between bus and rail.
- Transport policy on private car usage, which is currently restricted to specific governmental and joint venture organisations but has increased significantly. The latent demand for private car travel is potentially high.

6.7 Figure 6.3 shows schematically how the major cross boundary transport infrastructure will fit in with the port and other infrastructure.

Railways

6.8 Currently, the only railway connection between Hong Kong and the Mainland is the 25kv electrified double track crossing at Lo Wu. Surprisingly, this caters for only 7 or 8 Through Trains and some 10 or so freight trains. Compared to Paris, London, New York and the like, this is remarkably little for a modern city of 6.8 million connected to a hinterland of 30 million and a Province of 70 millions people.

6.9 By far the majority of all passenger travel between Hong Kong and the Mainland is by the KCRC's East Rail via the Boundary station at Lo Wu. The KCRC's East Rail Boundary service terminates at Lo Wu where a covered walkway links the Hong Kong Customs and Immigration facilities with the Mainland facilities in Shenzhen. Currently, some 90 million annual crossings are made at Lo Wu compared to about 2 million annual Through Train passengers. In the last three years of the 1990s, the growth in passenger traffic through Lo Wu surged to an unprecedented 17% per annum and although this has now returned to single digit growth, daily passenger traffic is averaging over 250,000 per week, rising to 300,000 at weekends and even more over holiday seasons. As a result demands regularly exceed capacity at peak times resulting in long queues of passengers on both sides of the Boundary and requiring KCRC to activate a quota system for passengers entering other East Rail stations in order to regulate the flow.

6.10 The HKSARG's plans to relieve the Lo Wu rail crossing are focused on the planned Lok Ma Chau Spur Line. This 7.4 km rail link will connect East Rail, at a point near Sheung Shui, to a new boundary checkpoint at Lok Ma Chau where it will be possible to interchange with Line 4 of the Shenzhen metro now under construction. The Lok Ma Chau Spur Line is planned to open in 2007-2008.

6.11 Apart from livestock, cross boundary freight services comprise break bulk and containers bound predominantly for the Hung Hom freight yard. From there containers have to be carried by barge or truck to warehouses or the container port at Kwai Chung. Freight forms a very modest part of the rail traffic carried by East Rail, averaging less than 70 wagonloads per day, and accounts for less than 1% of overall Cross Boundary freight movements and is largely domestic Hong Kong trade.

6.12 A Port Rail Line has been under planning since the early 1990s. Such a line would enable container shuttle services to operate between a rail freight consolidation/distribution centre at Pinghu in Shenzhen and a dedicated rail container terminal at the existing HKP in Kwai Chung (Figure 6.4). There is no firm commitment to the link as yet but KCRC continue to do feasibility studies.

6.13 Shenzhen is also developing an urban rail network and lines 1 and 4 will be open in 2003-2004. There are plans on the drawing board for further metro, suburban and inter-city rail development, which ultimately need to be coordinated with Hong Kong's growing network.

6.14 The Shenzhen-Guangzhou line is 25Kv electrified double track for fast services plus a third track for freight and slow passenger trains. Trains service speeds of up 200kph can be operated using the KCRC Ktt and the Guan-Shen Railway's tilting trains. Shenzhen station has some six platforms and accommodates an hourly or even more frequent service to Guangzhou East Station. It also offers services to other cities in the Mainland. In effect Shenzhen acts as Hong Kong's second Inter-City terminus and some 6%-8% of KCRC passengers using East Rail services transfer to Mainland train services at Lo Wu.

6.15 It was recently announced that the Guangdong and Hong Kong authorities are to jointly study a High Speed Rail (HSR) link between the Guangzhou and Hong Kong. This is consistent with the Regional Express Line (REL) put forward by RDS-2. It is understood that different technologies are being considered for the HSR, some of which could reduce the travel time between Guangzhou and Hong Kong to as short as 30-40 minutes.

6.16 In the NWNT such rail development possibilities raise questions for the:

- location of rail crossings between NWNT and Shekou;
- development of inter-modal nodes – Hung Shui Kiu, Tin Shui Wai; Kam Tin;
- Cross Boundary Rail Links to Chek Lap Kok (HKIA); and
- alignment and interchanges or similar services for Regional Express.

The coordinated development of railways in the PRD is fundamental to achieving sustainable development for the region.

6.17 Figure 6.5 shows schematically the planned cross boundary rail network in conjunction with existing rail infrastructure.

7. STRATEGIC DEVELOPMENT

7.1 Rapid expansion of the new towns has continued in the NWNT at Tin Shui Wai, Yuen Long and Tuen Mun. However, the rural environment has been seriously degraded by the uncontrolled development of container depots, building material depots, scrap yards and dumping sites. The rural conservation plans of the 1982 NWNT Strategy were never respected.

7.2 On Lantau Island, Tung Chung New Town has progressed and now houses around 42,000 people. The North Lantau area has been rezoned for recreational usage and the Disney Theme Park is under construction in the area previously slated for HKP expansion. Southern Lantau Island is still a largely rural area. A study to be carried out aims to explore an appropriate development strategy and is expected to favour tourism and conservation.

7.3 Further urban development is being planned in the NWNT with early commitment to Hung Shui Kiu between Yuen Long and Tuen Mun. In the longer-term urban development at Kam Tin North, Ngau Tam Mei and San Tin is being considered.

7.4 Table 7.1 shows a comparison of existing (year 2000) population and employment totals with forecasts for 2016 for the NWNT and North Lantau.

Table 7.1 Population and Employment Growth in the NWNT

	Population		Employment	
	2000(1)	**2016(2)**	**2000(1)**	**2016(2)**
NWNT	1,691,036	2,137,875	586,789	735,774
N. Lantau	40,239	287,498	52,207	138,935

Source: (1) 2000 By-Census data.
(2) 2000-based TPEDM, Scenario 1, Planning Department.

The table shows that strong population growth is expected in both the NWNT and North Lantau whilst significant employment growth is also expected in North Lantau.

7.5 Across the Boundary, Futian is under development and will be the administrative centre of Shenzhen; whilst Shekou and Nansha are growing rapidly and are seen as key logistic centres along with Shenzhen Airport.

7.6 The New Towns of the New Territories failed to become employment centres, manufacturing went to the PRD and service industries remained in the Metropolitan Area. As a consequence commuter flows have grown as the NWNT functions as a dormitory for the Harbour Area. On the other hand due to the airport and logistics related industries, Lantau Island is an employment centre attracting a large inflow of workers.

7.7 Cross Boundary commuting has grown and Shenzhen and the PRD cities have become employment centres for Hong Kong residents. In addition, a significant number of Hong Kong residents now live

north of the Boundary to take advantage of the lower cost of living and commute back to Hong Kong for employment.

7.8 The social, economic and spatial integration of Hong Kong and PRD continues unabated. Policies and infrastructure needs need to be coordinated to take in new patterns for work, business and play. New trends are evident in the PRD:

- Shenzhen is evolving into a logistics and service centre and is moving up the value-added manufacturing chain.
- The satellite industrial cities on the East Bank are maturing and their costs beginning to rise.
- The cities of the West Bank are now growing as outward processing centres linked by low cost barge service to Hong Kong and Shenzhen ports
- Guangzhou is developing as a modern city with an improved environment, metro system and a strategy to develop a High-Tech and Science corridor southwards to a new port at Nansha.
- Guangzhou is also reinforcing its position as a leading city and administrative centre by developing inter-city road and rail links radiating out from the city.
- Zhuhai has yet to fulfil its potential as an outward processing centre but has attracted tourism and service industries. It also has a substantial land bank.
- More distant cities lag behind in development but offer low cost labour and harbour ambitions to emulate Shenzhen and Dongguan.

7.9 In summary, Hong Kong sits at the gateway of a Province of over 70 million people (more than France or Britain) and one of the fastest growing trading and manufacturing regions in the world with substantial human and physical resources. The level of development has been and is still so great that Hong Kong cannot afford to follow an ad hoc approach. Timing is critical. Moving ahead too slowly could undermine Hong Kong's role as the region's leader. Yet, moving too quickly could put Hong Kong's separate status under the "one country, two system" principle at risk. Managing this is Hong Kong's greatest challenge today. The debate about Hong Kong's role is vital but it has yet to take place publicly and in a sustained manner where all stakeholders can participate.

7.10 How the NWNT and Lantau Island should develop has to be discussed within the context of Hong Kong's role in the PRD. The issues involved are complex. More research obviously needs to be done on many fronts. Equally important for Hong Kong is to create open forums for stakeholders to gather and discuss the issues involved so that the community as a whole can envision future developments and arrive at a consensus on the way ahead. After all, taxpayers will need to make substantial investments in how Hong Kong should develop.

8. FUTURE PROSPECTS AND THE WAY FORWARD

Views from Workshop Participants

8.1 This chapter summarises the views of the 65+ participants who attended the 13 July Workshop. We reflect on those issues that had the highest level of agreement, which also happen to reflect what participants felt represented the most urgent issues to be clarified prior to the HKSARG taking decisions that may be irreversible and involve billions of dollars.

8.2 All the issues raised at the Workshop have been captured in Appendix A using the mind mapping method.

Map 1: Key messages from today
This is the final summary mind map of the Workshop that reflects the day's discussion showing the breath, depth and complexity of issues involved.

Map 2: Objectives
This shows the Workshop's objectives on 13 July 2002.

Map 3: Key Issues – Transport Infrastructure in the NWNT
This shows what participants thought were the overall key areas of concern when considering what infrastructure needs might be necessary.

Map 4: Key Relationships
This shows the range of stakeholders involved in considering transport and infrastructure development in the NWNT. Parties with a "relationship" to this issue are defined as those who can help, influence or stop the process.

Map 5: Key Issues – Among Stakeholder Groups I
This shows what specific stakeholder groups saw as their key issues. The various groups were derived from participants sorting themselves into groups. This mind map shows public sector officials, transport related operators, and those who sorted themselves out as "others".

Map 6: Among Stakeholder Groups II
This shows what specific stakeholders groups saw as their key issues. This mind map recorded the key concerns for professional consultants, NGOs and community groups.

Questions from the 4 HBDI Quadrants
These questions were derived from groups of participants using human "thinking preferences" to tease out as many questions as possible related to development in the NWNT. A chart showing the four "thinking preferences" is attached.

Map 7: Alternative Strategies
This reflected a "stage managed" debate between two views in order to help focus discussion on what may be regarded as the two "extremes": namely a supply-led or demand-led approach.

8.3 The Workshop brought together key stakeholders from all relevant fields in the public and private sectors to discuss issues relating to the development of the NWNT. The following were issues that had the highest priority/urgency among the participants:

(1) Co-ordination with PRD/Mainland Bodies and Definition of Hong Kong's role with the PRD/PRC

This issue was clearly identified as the most important and pressing issue facing Hong Kong today. It was the most frequent one brought up by the greatest number of participants although it may have been brought up in varying terms. It was widely felt that although both Hong Kong and the Mainland recognized the importance of Cross Boundary exchanges and cooperation, the current mechanisms were not working sufficiently well. Whilst there was some co-ordination at the technical/administrative level, there was little discussion of the overarching issues of Hong Kong's role within the PRD region – the most critical one being whether Hong Kong and the PRD should cooperate or compete with each other on cargo and related facilities. Participants felt that discussion between the Hong Kong and Mainland authorities was required at the highest level to address many issues and provide the right framework within which technical/administrative decisions could be taken.

Cross-boundary relations are by definition complex. Those relations as well as the institutional capacity for collaboration have to be actively built over time. For a more in depth discussion about international working models of cross-boundary relationships and institutions, see *Cross-Boundary Air Pollution: A Comparative Case Study of the US-Mexico Border and the Hong Kong-Guangdong Border* (October 2001, www.civic-exchange.org).

(2) Rational and transparent decision-making within Hong Kong

The next most frequently raised issue concerned the absence of clear planning and transport decision-making in Hong Kong and that the NWNT provided an example of that failure. Participants expressed difficulty in following the HKSARG's logic in its current planning and transport approach in the NWNT. They believed that a comprehensive and wide-ranging review should be carried out to examine the underlying assumptions on current plans and projects. Participants wanted to see the HKSARG set out its goals and objectives for the NWNT more clearly and define quantifiable objectives by which policy successes could be measured.

(3) Development of a sustainable, multi-modal and integrated transport system

Participants believed that transport policies were being developed and made in an ad hoc, piecemeal manner. For example, major highway schemes were still being pursued long after the original planning criteria upon which they were based had been fundamentally altered – the most obvious scheme being Route 10. A consensus emerged at the Workshop that a sustainable, multi-modal approach to transport planning should be adopted using rail as the backbone and supported by other environmentally less damaging modes. It was also widely noted that whilst using rail was the HKSARG's stated policy, it could not be fulfilled unless the government changed its railway funding system. As times have changed, many felt the HKSARG

should show flexibility to review what may have been an outdated funding system. Furthermore, a large number of participants felt that new road building should only be considered when existing road space was fully utilized and environmental criteria met. New transport systems should be fully integrated with the existing ones both within the NWNT and the PRD region.

(4) Enhancement of Cross Boundary Transport Links

Many participants felt that cross boundary traffic would continue to grow in the foreseeable future with increasing social and work related travel. New links are required in addition to enhancing existing crossings irrespective of future ports, airports and logistics developments. Immigration/ administrative procedures at crossings should be streamlined to speed up the process.

(5) Logistics, Ports and Airports

Participants were of the view that careful consideration must be given to the best way of enhancing Hong Kong's role as a "hub". Whilst no specific recommendations were made on specific policy areas, participants tended towards exploring co-ordination/co-operation rather than competition with the PRD. However, such co-operation should be done within the context of a competitive business environment. Participants clearly did not wish to see government or monopoly control of key industries. Co-ordination/co-operation activities could include:

- Port investment in Hong Kong and South China to avoid wasteful competition and over-investment in infrastructure.
- Airport operations and hub activities for both passenger and freight.
- Environmental standards and measures to redress the current serious deterioration in the PRD as a whole.
- Co-ordination of PRD infrastructure development strategies.
- Development of consistent modal policies to promote sustainable transport.

(6) Optimization of Existing Road Network/Tolling Strategy

Participants were strongly in favour of Hong Kong's existing highways being used more optimally. Highly variable toll regimes on key road links were considered to create a sub-optimal distribution of traffic, wasting economic resources and unnecessarily bring forward capital expenditure on new roads. A comprehensive review of the current tolling situation was required as well as how to modify the tolls to produce a more economic distribution. Such a review should be done immediately, and definitely before committing public funds to new strategic highway schemes running into tens of billions of dollars.

Concluding Comments

8.4 Within Hong Kong, two main models for future transport infrastructure could be used for further deliberation: namely the SUPPLY-LED and the DEMAND-LED approaches. The supply-led approach is the more aggressive approach with emphasis on building major investment in new infrastructure to generate/attract activities and travel. A demand-led approach would focus on maximizing the use of existing infrastructure instead with new infrastructure only being added when a definite need has been identified. Workshop members generally took the view that the most prudent policy would involve a balance between these two more extreme approaches. The workshop was unanimous in the view that transport policy for the NWNT cannot be developed in isolation – it must be fully coordinated with that of the wider PRD region.

8.5 As indicated earlier in this report, the precise form of the coordination process requires some further work. The highly competitive nature of the business environment within the PRD means that day-to-day business decisions are beyond the control of government agencies. Furthermore, the planning authorities on either side of the Boundary still have different approaches to the provision of new infrastructure. However, at a minimum it should be possible to set up a framework between the Hong Kong and PRD/Mainland authorities within which planning and transport policies and infrastructure provision issues can be discussed at both policy and working level. Such a forum would also allow stakeholders and private operators to be consulted on issues, which will affect their operating environment.

8.6 The question remains as to how conflicting views and interests can be reconciled in articulating different development approaches. This will not just be a matter of more research, which is necessary in some critical areas, but also a matter of process. Complex issues by definition affect many people and interests. It is critical that thought also be given to creating deliberation processes through which all stakeholders can participate in order to continue to work towards greater clarity on how the NWNT and links to the PRD can and should be developed. Public dialogue processes may be initiated and sustained by either the HKSARG or the private sector, as demonstrated by the13 July Workshop. Indeed, the public and private sector could even collaborate to create more forums for collective deliberation. We see such efforts as positive developments in building a consensus on how Hong Kong may restructure its role within the PRD and Mainland China as a whole.

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