Regional Context

Chapter 16

CHAPTER SIXTEEN
REGIONAL CONTEXT

1. As it is a fundamental precept that the development of the TDS will incorporate the Pearl River Delta as the economic hinterland, detailed consideration of the conditions therein and the environmental implications of implementing development on the scale proposed need to be fully addressed.

2. While it would be desirable to incorporate an environmental baseline of conditions in the Pearl River Delta within the present Study, it is recognised that the undertaking of such a task would require a considerable effort in terms of data collection and analysis. This should however be an integral component of future studies.

3. For the TDS to be put into the regional context, it will be imperative to assimilate existing data, collect new data and interpret the results to provide an understanding of the overall carrying capacities of the territory and the economic hinterland. This will provide a better understanding of the development opportunities and the possible constraints on the strategic and comprehensive development within the region.

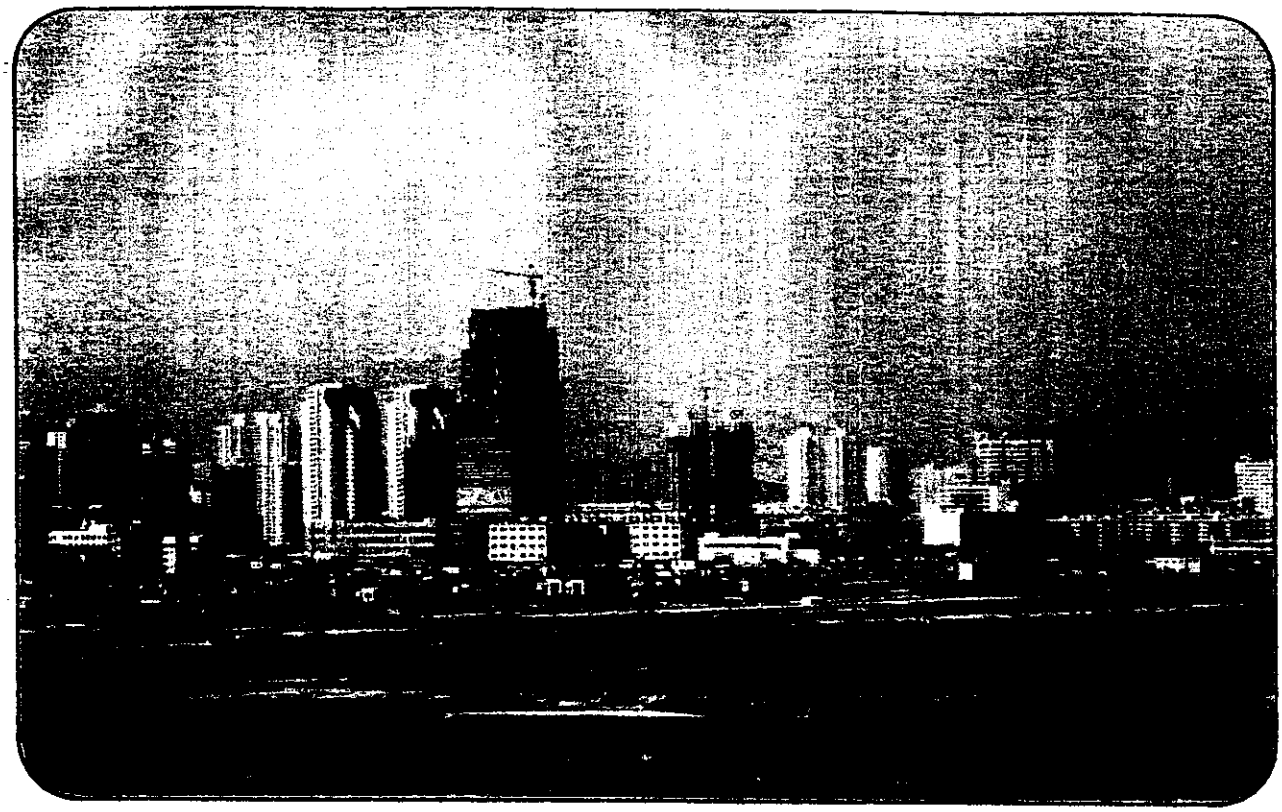
4. When considering the regional context of the TDS, recourse was made to the Study of Development Trends in Guangdong Province which was commissioned in 1993. This study confirmed that the economic growth witnessed in recent years in Guangdong Province was due to the shift in the manufacturing industry from Hong Kong which means that the polluting industries are effectively transferring from one region to another. It should be noted that there could well be land intensive manufacturers who wish to develop in the PRC which has more available land than Hong Kong, examples include the aerospace industry, chemical industries, food and beverage manufacturers.

5. While the increase in population forecast for Hong Kong, appears to be alarming even under the more moderate trend based scenario, in relative terms it is a fraction of that estimated for the region. In the Study into Development Trends in Guangdong Province, it was estimated that in Shenzhen alone, the population could rise from 1.7 million in 1992 to 8.8 million in 2011 (high estimate) compared with 0.35 million inhabitants in 1982. In Guangdong as a whole, the population forecast for 2011 is 94.2 million under the higher estimate with a commensurate 82.6 million as the lower estimate.

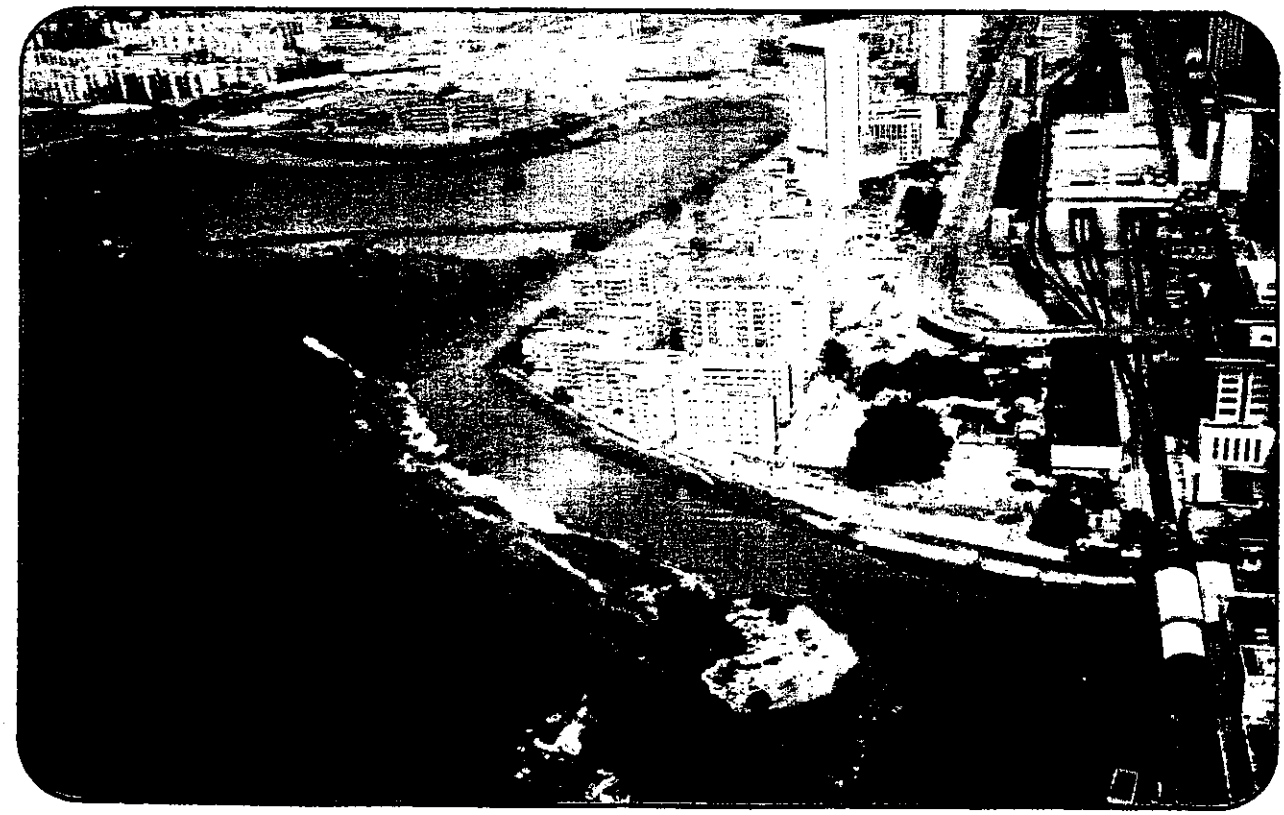
6. Provision of the basic essentials for life, including adequate food supplies and abundant drinking water, are key issues to be resolved. The mass destruction or development/clearing of land in the water gathering grounds (in the Guangdong Province) in preparation for the anticipated economic expansion and development could have a severe impact on water supply as well as jobs, homes and transport. These effects are not likely to be confined to the Guangdong Province but could impact on Hong Kong in particular in connection with the provision of water (70% of Hong Kong's supply presently comes from China) and foodstuffs. These are key issues which need to be urgently addressed in a coordinated manner at both the strategic and local levels.

7. In view of the massive expansion in the PRD as the economic hinterland for Hong Kong, a comprehensive and strategic approach to development must be established, otherwise the problems generated across the existing border will translate directly into problems for Hong Kong.

8. Transboundary water and air pollution problems, water supply, food supply, energy and waste disposal are critical issues which need to be resolved at the earliest opportunity through detailed feasibility studies and environmental impact assessments. Development of the



Development in the
Shenzhen Special Economic Zone



Pearl River Delta, the economic hinterland of Hong Kong

assessment and evaluation tools to predict the effects of development and to assist in environmental and development control are also key components of the development decision making process.

9. Regional infrastructure developments which are being or have been recently completed include:

- Rail : Guangzhou to Beijing line via Jiu Jang; extension of Jiu Jang from Ghengjiang to Aotou; Guangzhou to Zhuhai line; Pinghu to Shekou freight line; Pinghu to Yiantian freight line. Other possible rail connection include the connection of the Kwai Chung Port (freight) with the Guangdong system although no details are yet available. Plans have been made to link Shenzhen with Shekou, and there are proposals to provide a high capacity rail corridor along the eastern bank of the Pearl River connecting Hong Kong and Guangzhou in the long term thereby linking the regional airport facilities.

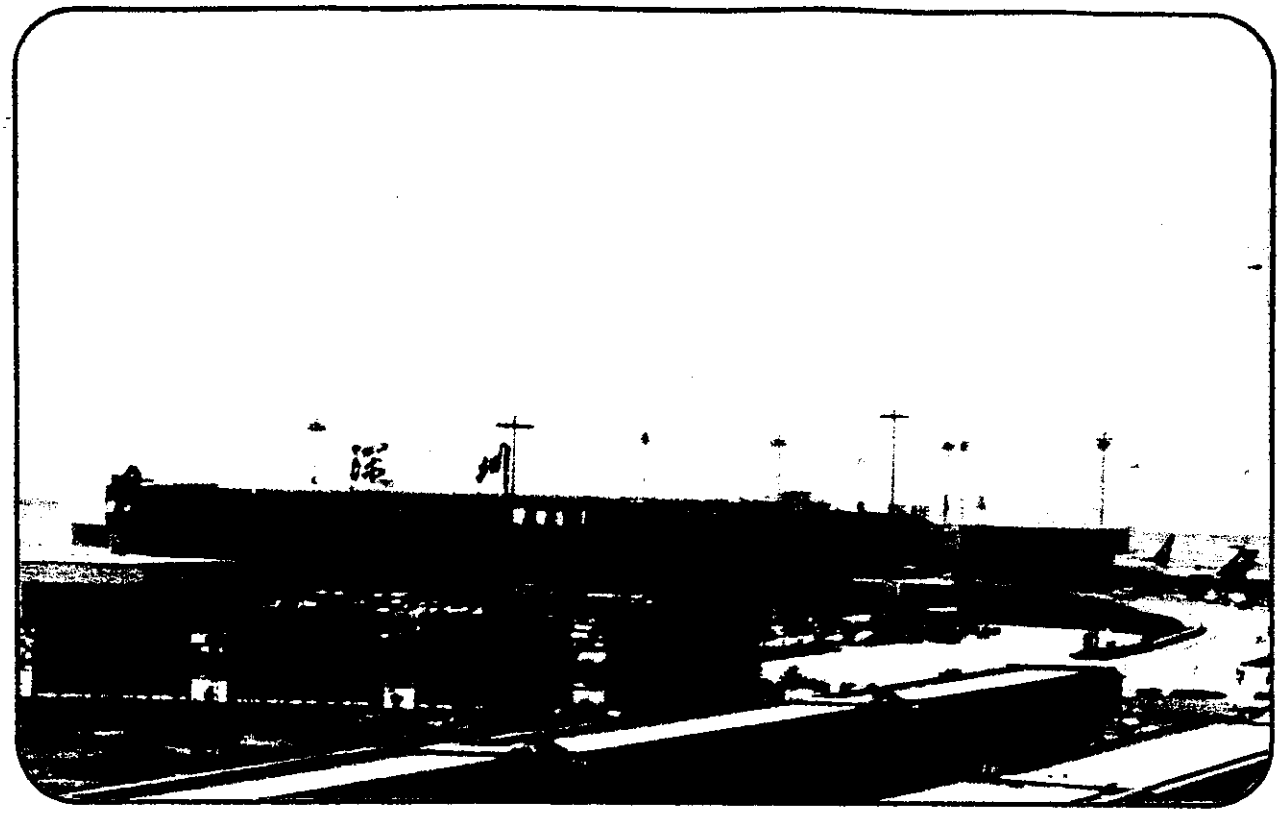
- Road Network : The following road networks have either been recently completed or are under construction and include the Guangzhou - Shenzhen - Zhuhai Expressway; Guangzhou - Zhanjiang Expressway; Guangzhou - Shaoguan Expressway; Shenzhen - Shantou Highway and the Shenzhen - Huizhou Expressway. Another possible road link is the lower Pearl River Crossing (Route Y) which has several possible connection but none of which has yet been proven acceptable on environmental grounds.

- Ports : The major ports in the Guangdong region include Guangzhou, Yantian, Shenzhen, Gaolan, Huizhou, Zhanjiang with the combined long term capacity of 459 million tonnes throughput compared to 349 million tonnes forecast for Hong Kong.

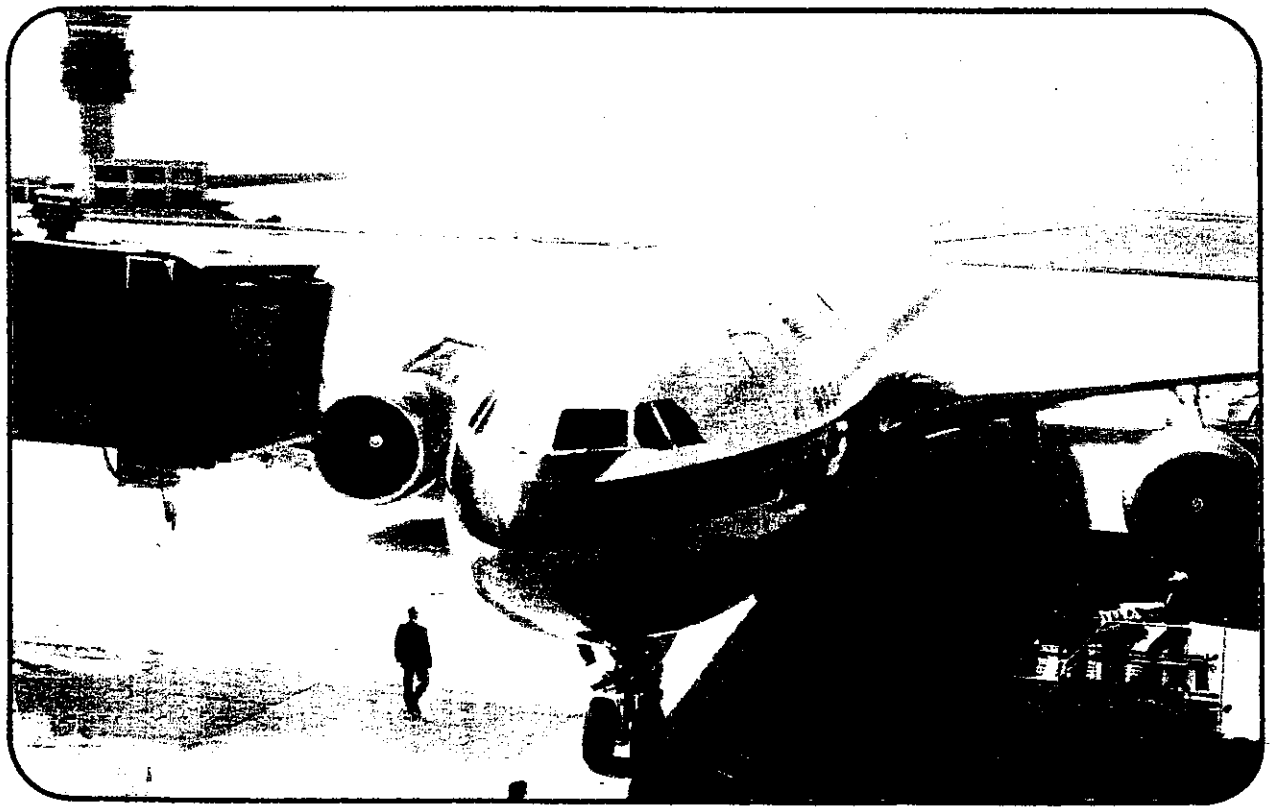
- Airports : The major airports in the region are Hong Kong, Guangdong, Shenzhen and Macau, with Hong Kong being the clear leader in the long term capacity forecasts.

- Energy Supply : Despite massive expansion programmes for the power industry, there are still significant shortfalls in energy at peak periods in the Guangdong Province. Although there are a plethora of small power plants in existence (many of which are coal fired) in the region, it would be difficult and possibly not cost effective to connect them to a central grid. Provision of additional energy is a key issue as the Guangdong region is impoverished in terms of natural power generating materials. New power plants include the hydro-electric schemes in Yunan and Guanxhi Provinces and the expansion of the nuclear facilities at Daya Bay. If the generating capacity of the power plants in Hong Kong were to increase to provide additional supplies locally and to the PRC, this could have an impact on Hong Kong air quality. A full scale EIA would need to be undertaken with a detailed site search if this need arises.

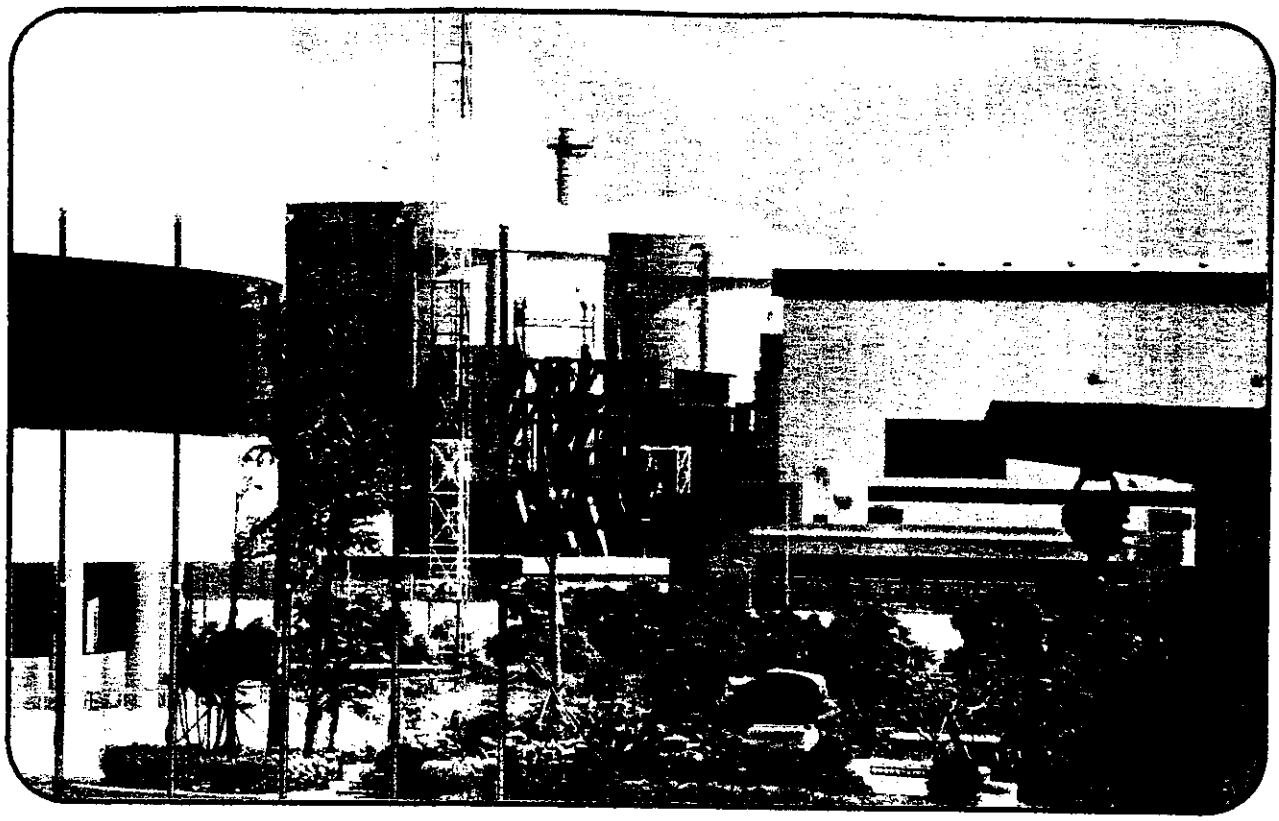
10. Water supply in the Pearl River Delta is primarily channelled through the three main rivers, Xijiang, Dongjiang, and Beijiang, with an estimated runoff rate of 31 billion cubic metres per annum. Only about 14% of the population are connected to a supply of potable water with the remainder dependent on groundwater supplies. Disposal of liquid waste is an issue which urgently needs to be addressed at the highest levels with a coordinated approach adopted for the implementation of effluent collection, treatment and disposal strategies. Ground and estuarine water supplies are in danger of being further polluted as a consequence of increased industrialisation as well as the influx of population to the region.



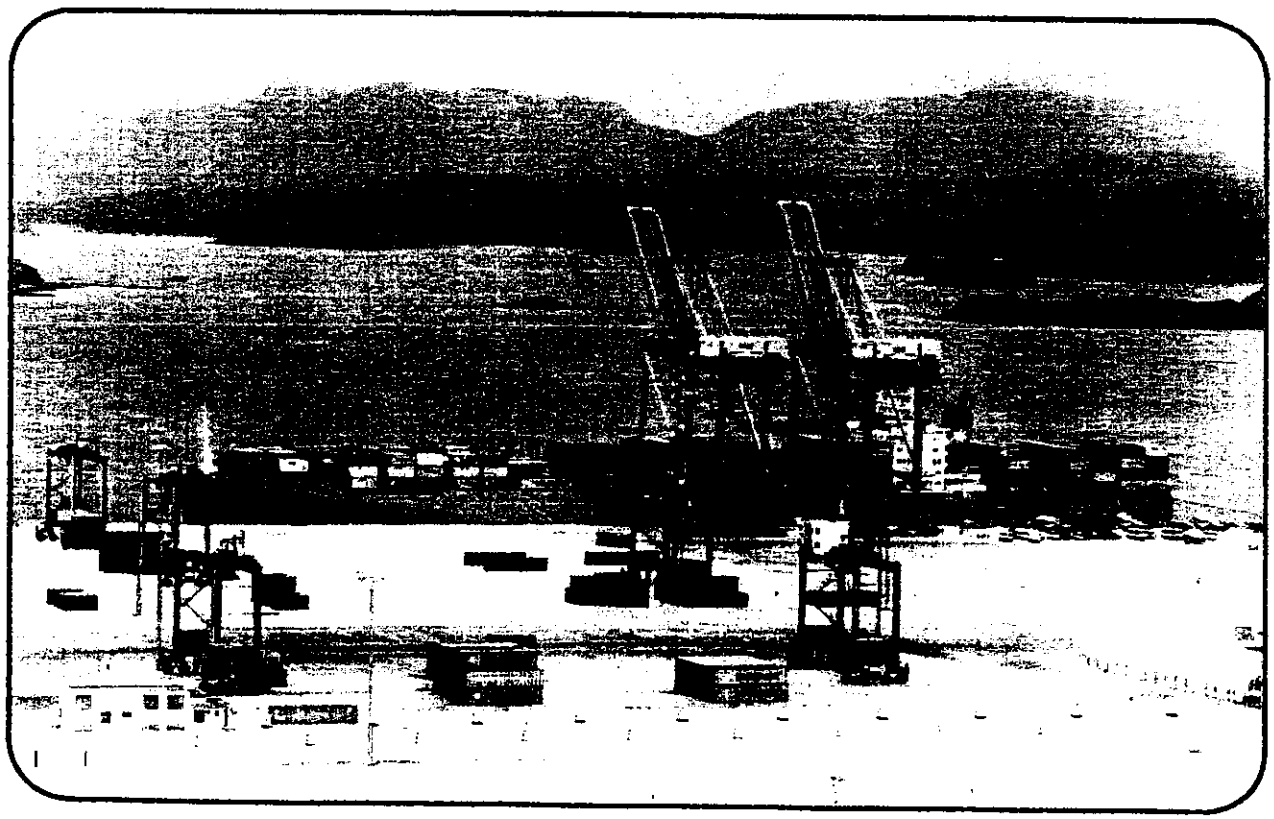
Shenzhen Airport



Macau Airport
(Credit : Macau Tourist Information Bureau)



Daya Bay nuclear power station



Yantian Port development, a pollution threat to Mirs Bay

11. Air quality data obtained for Shenzhen indicate serious air pollution and the general health of the resident population could be adversely affected unless action is taken. A major cause of emissions comes from the coal burning power stations (60% of electricity is generated from coal) with mobile sources increasing commensurate with industrialisation, such as goods vehicles. Fugitive dusts emissions have significantly increased reflecting the effect of stripping vast tracts of land ready for development. This land formation has a major impact on water catchments and gathering grounds, the impacts of which are reflected downstream.

12. An estimated 10 million tonnes of industrial wastes are generated each year, which can also reflect the migration of manufacturing industries from, Hong Kong to the Guangdong Province. Although some recycling or reuse of wastes is practised (fuel ash goes to the production of cement, plastic is recycled into bags etc.), the majority of these, together with domestic wastes, are largely deposited at landfill sites.

13. Several explosions and accidents have been reported at factories and plants in Shenzhen suggesting that controls on Potentially Hazardous Installations are not as strict as they should be. The need for PHI's cannot be denied but, with the increasing urbanisation, the number of suitable sites diminishes in Hong Kong as mentioned earlier in this Report.

14. Environmental consequences of the rapid development of the Guangdong Province have the potential to adversely limit the carrying capacities of the region itself as well as within Hong Kong. This could have a consequential impact on the achievable development threshold for Hong Kong and in the wider context of the Region. Environmental consequences of improved transport connections and linkages between Hong Kong and the hinterland may include, but are not limited to, the following:

(a) residential development pressure in the New Territories for workers in Shenzhen or further north. The standard of living offered in Hong Kong, and the family connections, added to the improved transport networks, may result in more people living in the NT or Border Area and working in Shenzhen or further afield;

(b) demand on energy and particularly the high quality of water supply presently available, is a major concern for reasons given previously;

(c) increase in water demand resulting in a greater volume of wastewater requiring disposal. The disparity in the standards for discharge of effluent in different parts of the Province, and most especially compared to the pollution protection mechanisms and controls which are already in place Hong Kong, is a major issue to be addressed at a strategic level;

(d) increases in the demand for energy to keep apace with developments. These need to be reconsidered as the resources are limited while fuel burning power stations or nuclear power stations do not necessarily afford the appropriate solutions. Energy efficiency and conservation measures can alleviate some of these constraints;

(e) negation of the improvements in the Shenzhen River and Deep Bay as a result of the investments being made to clean up these areas which have zero discharge policies. However these efforts could be in vain if the Lower Pearl River Crossing is permitted to go ahead (due to changes in the inter-tidal regime, possible reduction in flushing capacity of Deep Bay, potential for major impacts during the construction phase, lack of information as to whether it would be feasible to totally submerge a tunnel underwater, in view of the problems in terms of air quality at the ventilation shafts);

(f) potential pollution from the development of Yantian Port. Chronic pollution from

port development poses a potential threat to Mirs Bay and Tolo Harbour. Most port developments are chronic polluters unless careful and effective pollution control measures are incorporated in the design. Potential sources of such pollution include the surface water runoff which can be charged with oil, grease and sediments, effluent discharge from the vessels within 3km of port (although this is illegal under the MARPOL Convention, it is difficult to control) and the land based workforce at the Port, and the insidious leakage of oils from vessels calling into port. Strategic planning and implementation of a comprehensive sewerage master plan for Hong Kong and Shenzhen should be a primary aim as well as the implementation of comprehensive pollution control measures at all of the regions port facilities;

(g) emissions from industrial developments may result in an increase in transboundary pollution as some of Hong Kong's industries are relocated to the north. Transboundary air pollution problems are also a major issue in connection with the forecast increases in transport corridors and road construction taking place in the region;

(h) strategic waste disposal for all domestic, construction and industrial wastes will place a strain on existing disposal sites; and

(i) loss of habitat or destruction of ecosystems. Although the TDS has incorporated conservation strategies into the development process, the expansion in the Region could have serious consequences in terms of habitat loss, or destruction of fragile ecosystems. Areas which are most vulnerable include the Deep Bay ecosystems, Mai Po Marshes and the Futian Nature Reserve, Mirs Bay, Tolo Harbour and the marine parks. In order to protect these and similar areas, a concerted effort will be required by the authorities in Hong Kong and the rest of the region. The role of the Non-Government Organizations (NGOs) can facilitate the cause and focus specific concerns relating to individual areas.

15. In 1989 the Environmental Protection Law of the PRC was passed and implemented by the National Environmental Protection Agency. In addition to the NEPA which has an office in Guangzhou there are numerous sub-regional and district level environmental committees overseeing the protection of water quality, air quality and marine resources. A concerted and comprehensive effort is needed to coordinate these bodies to ensure that future development of the Region is considered holistically, to exchange pollution control technologies, develop strategic environmental protection measures and resource conservation.