CHAPTER FOURTEEN SUMMARY AND CONCLUSIONS

1. While the overall environmental quality when all the developments are in plance, i.e.- by 2011 was assessed in the Environmental Assessment of the Preferred Options for the Long Term Strategy, the present assessment is basically broadbrush in nature and serves to point out the relative environmental merits and demerits of the different options. Nonetheless, the analysis suggests that a number of the environmental problems will start to manifest themselves prior to 2006. Issues of particularly serious concern are: air quality deterioration linked to predicted increases in diesel-engined goods vehicle traffice, the overloading of environmental infrastructure, including especially the NT sewerage systems and the strategic landfills, and increases in impacts from traffic noise.

2. For the medium-term stsrategy to be environmentally viable, furhter actions will need to be undertaken to address air qualituy problems. As well, the provisioon of sufficient resources to upgrade environmental facilities and to deal with traffic noise problems is required as a matter of urgency. These isssues and through strategic EIAs fo the recommended stategic growth area.

3. The key issues and relative advantages and disadvantages of the options are summarised in Tables 14.1 and 14.2.

Table 14.1 Summary of Key Issues

Common Impacts	NT-Biased Option	HB-Biased Option	Recommended Strategy
<u>Effluent Disposal</u> Treatment and disposal to optimise resources; strategic developments may overload existing and planned systems. Need to urgently review SMP's & DMP's to ensure phasing and timing of remedial/ improvement measures is still appropriate	More problematic because of greater effluent generation in NWNT where levels of treatment are low and points of discharge often inappropriate (i.e. Pillar Point Outfall or via Shenzhen River to Deep Bay)	SSDS (I) will accommodate proposed developments but may need to expand some other facilities or accelerate SSDS(II)	Distribution of resources for improvement of collection, treatment and disposal schemes more cost effective than other options
<u>Air Quality</u> Although industrial emissions do not exceed the SO_2 trigger level, there is still the need to reduce emissions where possible.	The increase in SO_2 in Tuen Mun ACZ is slightly greater. Greater impact from vehicle traffic.	The increase in SO_2 in Harbour ACZ is slightly greater. The canyon effect will be intensified.	A balance of the SO_2 emissions budget over a greater area which should not place such stress at local level compared to other options.

Table 14.1 Summary of Key Issues (Cont'd)

Common Impacts	NT-Biased Option	HB-Biased Option	Recommended Strategy
Topography in Tuen Mun may constrain dispersion of pollution while the canyon effect in built environment of the metro area may create problems especially at a local level. Trigger level for AQOs NO_2 would be exceeded in Tuen Mun ACZ regardless of the options adopted. More stringent vehicle emissions controls and better transport-environmental policy are required. Dust levels need to be reduced from all sources as this is recognised as a major health hazard.		The large scale reclamation and construction works required in this option are likely create greatest impact, especially considering more population is proposed in the metro area.	Release of the emissions over wider area so local impacts not as severe as expected for other options. Both traffic and construction works will contribute but effects are more likely to be dispersed.
<u>Solid Waste</u> Domestic wastes need to be reduced as do construction wastes to extend the life of the disposal facilities. Collection and disposal issues are in urgent need of review. Disposal of sludge from Water Treatment Works and Sewage Treatment Works need to be reviewed.	Refuse Collection Points are more dispersed and the sea transport of wastes has not yet developed; therefore, longer trips for refuse vehicles. Local problems of air pollution, noise and congestion of the refuse vehicles likely to arise.	Higher potential for dust problems as materials are imported or exported to/from Metro for reclamation. Existing/planned refuse transfer facilities strategically developed in Metro but capacities need to be reviewed in future.	Balanced approach to collection and disposal which infers that greater number of people affected albeit to a lesser degree than for the other scenarios.

Table 14.1 Summary of Key Issues (Cont'd)

Common Impacts	NT-Biased Option	HB-Biased Option	Recommended Strategy
Noise High noise levels due to domestic traffic, offsite port back-up and construction activities. Noise impact needs to be mitigated at the project implementation stage	Greater potential impacts as the ambient level is relatively low.	Greater number of people potentially being affected	
Ecology Need to conserve and enhance significant ecological attributes	Problem associated with the need for infrastructure which could impinge on conservation areas. Increased threats to ecologically sensitive area, to high grade agricultural land and also to areas of high landscape value.	Potential loss of coastal habitats and seabed to be reviewed and appropriate mitigation measures to be developed	The overall potential adverse ecological impacts of each option to be reviewed to ensure a balanced development strategy is achieved.

Table 14.2 Advantages and Disadvantages of the Variant Options

	NT-Biased Option	HB-Biased Option
Advantages	• concentration of development in the NWNT would promote closer economic interaction between Hong Kong and the PRD, efforts could be concentrated on enhancing pollution control mechanisms. • higher levels of development, especially in the NWNT, would help enhance the viability of proposed more environmentally friendly passenger rail links; • the upzoning of certain areas of land currently used for open storage and other temporary development would enhance environmental characteristics; and • the creation of new employment nodes around multi-modal transport interchanges would help alleviate, the current population - job imbalance and reduce environmental impacts (air/noise) associated with NT - Metro commuter transport.	• all the harbour reclamation areas required are either covered by detailed feasibility studies or are currently subject to such investigations that will critically and comprehensively address all relevant major environmental issues (or identify areas of further study); • the consolidation of residential development in the Metro Area would create a better population : job balance, providing shorter travel times and trip length; • the new reclamations at West Kowloon, Tsuen Bay and Kowloon Bay could provide opportunities for the creation of major, secondary employment nodes around MTRC/KCRC stations, thus helping to spread traffic loadings on road and rail-based transport systems, especially in respect of cross-harbour transport links; • the formation of the new reclamations could be undertaken using marine sand transported by barges. This would avoid a large number of dump trucks having to travel along congested roads through high-density city districts; • the consolidation of strategic growth needs in the Metro area would pressures of development on areas of ecological and landscape value in the New Territories; • completion of the proposed reclamations would have the further benefit that they would eliminate highly polluted bodies of water, such as the Kai Tak nullah; and

Table 14.2 Advantages and Disadvantages of the Variant Options (Cont'd)

	NT-Biased Option	HB-Biased Option
Disadvantages	• comprehensive feasibility and environmental impact assessment studies would need to be prepared with a lead time of about nine years which would leave only limited time to achieve the scale of development required to meet strategic growth needs; • forecast deterioration in air quality is most severe in the Tuen Mun ACZ due to the NT-Biased development proposals; • flood-water drainage systems in low lying areas would need to be comprehensively improved; • water supply systems, sewerage networks and treatment facilities would need to be provided or substantially upgraded within a relatively short time scale; • the creation of new employment nodes to minimise traffic movement would require proactive steps to be taken by the Government to induce developers to invest in the New Territories in preference to locations in the Metro Area; and • accelerated development in the New Territories would increase threats to ecologically sensitive areas, to areas where high grade agricultural land still exists and also to areas of high landscape value.	• some reclamation works could have temporary adverse effects on water quality and could cause disruption to marine activities; • large quantities of fill would be required, much of which would probably need to be obtained from extra-territorial sources which may not be of such high quality as that in the territory. • it may be necessary to accelerate the provision of new passenger rail links, especially to cope with additional transport demands generated by development at Kai Tak - Kowloon Bay, Green Island and on the Central - Wanchai reclamation; • it would be necessary to accelerate the completion of the Strategic Sewage Disposal Scheme Stage II (SSDS); and • the loss of coastal habitat and seabed which need to be assessed in detail.

4. On the basis of the foregoing the following conclusions have been drawn:

(a) protection of water quality would involve the greatest cost under the NT-Biased Option, as greater provision would need to be made for infrastructure, sewage treatment and disposal facilities for both domestic and industrial development;

(b) protection of noise is likely to involve the greatest expenditure under the NT-Biased Option as development would be more dispersed and the impacts of traffic potentially greater;

(c) exceedance of AQOs is forecast in Tuen Mun ACZ regardless of the medium-term options being considered;

(d) more stringent vehicle emissions control and better transport-environmental policy are required;

(e) deterioration in vehicle-related air quality would be most severe under the NT-Biased Option with "knock on effects" observed in Yuen Long, Fanling/Sheung Shui and North Lantau ACZs;

(f) increased generation of dust is most likely under the HB-Biased Option, with the extent of construction and reclamation required. With the concentration of population in this area, the number of potentially sensitive receivers is likely to far exceed those under the NT-Biased Option;

(g) solid waste disposal will create greater impacts due to the transportation of wastes to WENT and NENT along inadequate road networks;

(h) the number of potential residents or transients in or through PHI Consultation Zones have no significant difference in the three options;

(i) the Recommended Strategy balances the impacts and necessary environmental engineering and pollution control expenditure associated with the development of a Medium-Term Strategy; and

(j) the potential adverse impacts on terrestrial habitats, high grade agricultural land and areas of high landscape value are likely to be greatest under NT-Biased Option.

POLICY ISSUES

5. Policy issues which may need to be considered in the near to medium term have been identified as follows:

(a) the possibility of introducing more pollution charging mechanisms similar to sewage charges;

(b) the improvement of traffic management systems, for example, by introducing traffic restrictions in environmentally sensitive areas;

(c) demand management as an integral part of transport/environment strategies;

(d) more stringent pollution controls over vehicular emissions;

(e) the promotion of research and development into the use of energy efficient transport modes or ways to implement energy reduction (and reduction in water consumption) measures for industrial and transport sectors;

(f) the use of new zoning mechanisms to resolve residential/traffic and residential/industrial interface problems;

(g) the encouragement of the industrial sector to reuse, recycle and recover materials to reduce disposal requirements (and for pollution control);

(h) the implementation of the recommendations of the Waste Reduction Study at the earliest opportunity;

(i) the optimization of residential development in areas which have easy access to or can be linked to multi-modal public transport systems;

(j) the review of existing and planned sewerage infrastructure system and the development of a strategic sewerage and sewage treatment and disposal scheme to rationalize collection, treatment and disposal mechanisms, to minimize impacts and bring early improvements to receiving water quality, particularly for NWNT waters;

(k) the preparation of Strategic Environmental Management Plans which would examine the existing "baseline" conditions within each area taking all environmental criteria into account. Development plans or proposals would then be examined in holistic terms so that management plans/options would be thoroughly considered rather than looking just at transport in terms of air/noise/interfaces etc; and

(l) protection of Ramsar Site, Buffer Zone I and II in Deep Bay and the remaining wetlands contiguous to them from further developments; and

(m) development of conservation management centres in NENT and NWNT, in addition to country parks, special areas, proposed marine park, proposed marine reserve and controlled development of educational facilities for the promotion of conservation.

NEXT STEPS

6. A proposed action plan which aims to outline the way forward is presented as Table 14.3.

Table 14.3 Action Plan

	NT-Biased Option	HB-Biased Option	Recommended Strategy
Policy Issues	• acceleration of EIA/TIA/DIA processes so that they parallel the preliminary design stage; • incentives for new developers to choose NT in preference to Metro Area; • high grade agricultural areas need to be conserved even in the face of financial incentives; and • ecologically sensitive and important conservation areas need protection.	• large volumes of fill required, need to define sources of marine sand; • acceleration on completion/implementation of SSDS II • acceleration provision of new passenger rail links • appropriate mitigation measures required to address potential adverse impacts on coastal habitats and seabed.	• acceleration of EIA/TIA/DIA's for the New Territories. • cumulative environmental impacts to be studied.
Immediate Requirements	• NWNT Sewerage Review	• SSDS II EIA	• Review of SMP's
Proposed Studies/ Expenditure	• detailed assessment of costs for provision of drainage/sewerage • costs associated with noise mitigation (greatest under this option because it is fragmented) • Air Quality studies with respect to traffic and industrial emissions	• Air Quality Studies for Tuen Mun/Harbour ACZs; • Air Quality studies with respect to traffic and industrial emissions	• Air Quality Studies for Tuen Mun and Harbour ACZs; • Air Quality studies with respect to traffic and industrial emissions

Table 14.3 Action Plan (Cont'd)

	NT-Biased Option	HB-Biased Option	Recommended Strategy
Prerequisites	• Detailed EIA's for provision/enhancement of water supply systems, sewerage treatment and disposal systems; • Drainage studies for low lying flood plains; • Transport/Patronage Studies; • Detailed forecasts of goods vehicles and Cross Border Movements.	• Detailed EIA's for provision of new passenger rail links, further studies on the reclamations in more detail and considering cumulative impacts of mega developments, sewage treatment and disposal options; • Transport/Patronage Studies.	• Detailed EIA/DIAs • Transport/Patronage Studies • Detailed forecasts of goods vehicles and Cross Border Movements.

RESOURCE IMPLICATIONS

7. The Strategic Environmental Assessment carried out as part of the TDS Review, including the assessment of the medium-term options, makes it clear that there are a range of policy issues that need to be pursued as a matter urgency and which need to be translated into real programmes, addressed through the application of the appropriate resources. Many programmes are already in place (for example, with respect to the recommendations on assessment of the assimilative capacity of receiving water bodies, initiatives are already being pursued and resources are earmarked in the Resource Allocation Exercise). However, for many of the other programmes and recommendations being put forward as a result of the TDS exercise, additional resources will be required.