

**Notes of View-sharing Meeting held on 2 March 2001
Future Landfill Development in Hong Kong**

1. Purpose of Meeting

- 1.1. To gather views from key stakeholders on the following issues related to solid waste disposal in Hong Kong, as a reference for EPD to formulate the next steps in the planning of new landfills:
- (a) Waste Disposal Problems
 - (b) Approach and Methodology for Identifying New Landfill Sites
 - (c) Potential Locations Identified
 - (d) New Ideas and Suggestions for Developing Landfilling Capacity
 - (e) Means to Receive Public Opinions

2. Attendance

- 2.1 The list of those attending the view-sharing meeting is given in Annex 1.

3. Background Information presented by EPD

- 3.1 EPD presented an overview on the waste disposal problems and approach adopted by EPD in developing new landfills, details as shown in the brief introductory paper (Annex 2) and presentation slides (Annex 3).
- 3.2 It was highlighted that no matter how well we do in reducing waste quantities, by waste reduction measures and even bulk reduction facilities (if these were to be built), there would still be a significant amount of waste left to be disposed of and additional landfill space would inevitably be required. Even if all our waste reduction targets as set out in the Waste Reduction Framework Plan (1998) were achieved, the existing landfills would be exhausted between 2012 and 2018. In the worst scenario, they could be filled up as early as 2005 to 2008. Noting that a long timeframe of 10 years or more would be required to develop new landfills, the task of new landfill planning has to be started now.
- 3.3 The results of an initial constraint analysis over Hong Kong were presented, together with a plan of the unconstrained areas identified for which EPD intended to carry out further strategic assessment.
- 3.4 EPD stressed that no specific sites had been identified or selected at this stage for potential new landfills. It was emphasized that, through this kind of view-sharing forum and other means, EPD hoped to have more interflow of information, ideas, comments and suggestions with interested parties at the early stage of landfill planning and throughout the process.

4. Records of Discussion

- 4.1 The Waste Disposal Problems

4.1.1 *Points raised by various members*

- (a) It was considered that waste disposal was a serious and imminent problem in Hong Kong and there was no time to waste. The problem would be aggravated by the ever-growing population, which was estimated to be 8 to 10 million in the next two decades.
- (b) It was accepted that new landfills would be required on top of all other waste management measures including waste reduction and incineration, and Government had to start planning for them now. Experience showed that the development timeframe for landfills was even longer than other waste treatment facilities.
- (c) At the same time, Government should get all sectors of the society and all waste producers involved in formulating waste reduction, reuse and recycling measures and in practicing them.
- (d) Among all the solid wastes landfilled, construction and demolition (C&D) waste constituted a major portion. Landfill life could be prolonged if Government implemented better C&D waste management measures to reduce C&D waste generation, such as mandating on-site/off-site sorting, promoting recycling of surplus C&D materials, establishing fill banks and imposing landfill charges. Recycled C&D materials could also perhaps be sold outside Hong Kong as a resource for beneficial reuse where they are needed.
- (e) Temporary sites should be identified for storing C&D waste generated to facilitate subsequent sorting and reuse, especially for some fast-tracked construction projects.
- (f) On the other hand, the limited reclamation space remaining should be reserved for public fill only and use of dredged marine sand should be prohibited. The current form of reclamation contracts should also be reviewed to encourage the contractors to prolong the reclamation life rather than just filling it up quickly.

4.1.2 *Responses from EPD*

- (a) EPD noted that members shared the concern on exhaustion of landfill space and all appeared to agree on the need to start planning for new landfills now. EPD recognized the expectation for more work on waste reduction and recycling, but at the same time drew members' attention to the complexity of the issue, such as availability of markets for the recycled materials. Different measures, including setting up C&D waste sorting facilities, searching for fill bank sites and implementing landfill charge, were in hand.
- (b) It was reiterated that the targets set out in the Waste Reduction Framework Plan were already quite ambitious when compared with the experience in other developed countries. Even if all possible waste minimization/reduction/recovery measures were implemented successfully so as to achieve waste reduction equal to the best in the world, an enormous quantity of residual waste would still be left which required disposal.
- (c) Suggestions on public fill management would be passed on for CED to consider.

4.2 Approach and Methodology for Identifying New Landfill Sites

4.2.1 *Points raised by various members*

- (a) Members generally agreed with the approach of constraint mapping, and that all the unconstrained areas should be carried forward for strategic assessment on their environmental performance, socio-economic impacts and technical feasibility. The process should be transparent and the results should be made known to the public so as to enable the society to participate in the discussion.
- (b) Green belts might not be absolute constraints at this stage and could be considered possible areas for siting landfills, as in many other overseas countries.
- (c) The expansion potential of existing landfills should be fully explored to make them last as long as possible.
- (d) In parallel with landfill development, waste-to-energy facilities should also be provided to reduce the bulk volume of waste and to avoid the need for building many mega-scale landfills in Hong Kong, where space is such a constraint. It would be necessary to bring these alternatives and their consequences to the attention of the Legco members and the public for consideration.
- (e) To address the concerns of sustainable development, the Computer Aided Sustainability Evaluation Tool (CASET) could be used to compare the areas/sites in term of sustainability.

4.2.2 *Responses from EPD*

- (a) EPD welcomed the general support to proceed with strategic assessment on the possible areas for locating landfills, and reaffirmed that it would be done vigorously with all the related suggestions taken into account. EPD remarked that waste-to-energy facilities were not the focus of today's discussion and their feasibility was still being looked at.

4.3 Potential Locations Identified

4.3.1 *Points raised by various members*

- (a) Whether the new landfills should be on land or formed by reclamation was an open issue that needed to be further studied. If reclamation was really necessary and there was no better alternative, it should not be rejected. It would be a matter of doing it sensibly without causing detrimental effects on ecology and the environment. The Protection of the Harbour Ordinance only protects waters within the Harbour but not all of Hong Kong waters. Also, marine sand should not be used in forming the reclamation.
- (b) A 300-hectare site as indicated would be too small to accommodate all the waste generated in the next 50 years, particularly in light of the huge amount of C&D waste that might be generated from continuous building and development works.
- (c) The Government should make reference to the successful experience of Singapore in developing a landfill on an artificial island.
- (d) In the choice of marine locations, the livelihood of fishermen should be taken care of and damage to fisheries should be minimised and taken into account.

4.3.2 *Responses from EPD*

- (a) EPD acknowledged members' open attitude on the areas being identified. For potential marine areas, EPD reiterated that it meant operating properly engineered landfills on reclamation formed by non-polluting materials and methods, and by no means would refuse be dumped directly into the sea.
- (b) Observations and requests made would be passed on for the assessment team to consider.

4.4. New Ideas and Suggestions for Developing Landfilling Capacity

4.4.1 *Points raised by various members*

- (a) The idea of mining existing landfills to separate out inert materials and make way for additional landfilling space was discussed. However, there were concerns on its practicality, health and safety.
- (b) The idea of disposing of waste underground was raised, but the required excavation would be so extensive that a huge amount of excavated rock would need to be handled before the ground was available for waste disposal. Therefore, it would unlikely be feasible.
- (c) Other possibilities included using public fill to raise the formation levels above that normally used for new development areas and to provide wetland compensation.

4.4.2 *Responses from EPD*

- (a) EPD thanked members for the ideas and suggestions brought up by members and would consider them further.

4.5 Means to Receive Public Opinions

4.5.1 *Points raised by various members*

- (a) Members welcomed this kind of forum which enabled the Government to collect views from academics, green groups and other key stakeholders on landfill development. They considered that this was a good start to enable the whole planning process to be more transparent and to enlist public participation.
- (b) The waste problem should be publicized widely to the public, including District Councils and Legco, as early as possible so as to make the public aware of the scale and urgency of the problem. The public should be informed of the Government's approach and strategy in tackling the problem. In particular, the public would need to be educated on the concept that landfills were the ultimate 'sink' of all residual wastes and were always required, although options were available to reduce the burden. Members envisaged that it would be difficult to convince the public, but they were willing to help in the process.
- (c) Some other forms of channel for more public participation in the discussion of landfill development should be established, and the proposed website would be a good starting point.

- (d) Front-line staff of EPD should also be made aware of the overall waste strategy and be prepared to respond to related questions from the public.
- (e) EPD also had the role to assure the public that all the schemes would be assessed seriously and any new landfills and the related reclamation would be constructed and run with minimum impacts on people and the environment.
- (f) EPD and CED should also spread the message of the waste problem across the Government so that other bureaux and departments would take full consideration of it in their decision-making.

4.5.2 *Responses from EPD*

- (a) EPD agreed with members' views, particularly on the importance of publicizing the waste problem, maintaining a transparent process and getting public participation. They recognized that it would be very difficult to reach consensus in this context, especially with the "NIMBY" attitude, and this forum was really a first step to gauge public reaction. They would review further on the best timing and means to conduct further view-sharing sessions, public hearings, ACE and Legco consultations, etc.

5. The Next Steps

5.1 EPD would take the following steps in the immediate future:

- (a) Proceed with strategic assessment on the potential areas identified for landfill development.
- (b) Set up a website for disseminating relevant information and collecting comments on landfill development. Subject to members' agreement, the notes of this view-sharing forum would also be posted after members had seen and commented on the draft.
- (c) Conduct further rounds of view-sharing meetings when more information or results are available.

Organisations

Environmental Protection Department (Chairman)
Environmental Protection Department
Environmental Protection Department
Environmental Protection Department
Environmental Protection Department
Civil Engineering Department
Scott Wilson (Hong Kong) Ltd
Enviros Aspinwall
The Advisory Council on the Environment
The Conservancy Association
The Conservancy Association
Environmental Contractors Management Association
Environmental Contractors Management Association
Federation of Hong Kong Aquaculture Association
Friends of the Earth (Hong Kong)
Friends of the Earth (Hong Kong)
Greenpeace
Greenpeace
Green Lantau Association
Green Power
Hong Kong Fishery Alliance
Hong Kong Fishery Alliance
Hong Kong Fishery Alliance
Hong Kong Waste Management Association
Hong Kong Waste Management Association
Hong Kong Institution of Planners
Hong Kong Institute of Environmental Impact Assessments
Society for the Protection of the Harbour
World Wide Fund for Nature Hong Kong
University of Hong Kong
Chinese University of Hong Kong
Hong Kong Polytechnic University
Open University of Hong Kong

Representatives

Mr Rob J S Law
Dr Ellen Chan
Mr Lawrence Lau
Mr C K Chen
Mr Derek Leung
Mr Winston Fong
Mr Harold Insley
Mr John Lucas
Mr Otto Poon
Ms Lister Cheung
Mr Jor Fan
Mr Robert Chapman
Mr Mike Campbell
Mr Pang Wah-Kan
Mr Edwin Lau
Miss Daphne Mah
Mr Ho Wai-Chi
Mr Yam Man-Tung
Mr Fabian Pedrazzini
Dr Cheng Luk-Ki
Mr Keung Yin-Man
Mr To Kwong-Biu
Mr K S Cheng
Mr Joe Zorn
Mr Emmanuel Vivant
Mr Ian Brownlee
Mr Tom Chapman
Mr Winston Chu Ka-Sun
Mr Cheung Wai-Lung
Dr Albert Keonig
Professor Lam Kin-Che
Professor C S Poon
Ir Peter Yau

**Future Landfill Development in Hong Kong
View-sharing Meeting on 2 March 2001**

Purpose of this Paper

1. This paper serves to provide information to facilitate discussion on the future landfill development in Hong Kong to meet its long-term waste disposal needs.

The Waste Disposal Problem

2. Since the 1950s, the Hong Kong Government has been providing landfills for disposal of solid waste. In the 1980s, the Government started planning large and modern landfills with high environmental standards to meet the growing waste disposal demand and to safeguard the health and welfare of the community. After years of development work, three modern landfills with a total disposal capacity of 140 million cubic metres were progressively commissioned in 1993 –1995. In parallel, a network of refuse transfer stations is also developed in the urban areas and new towns to transport waste to the landfills in an environmentally acceptable manner.

3. In the past 14 years, the amount of solid waste delivered to the landfills has increased by about 5% on average per year, with about 6.6 million tonnes landfilled in 2000. If this trend continues, our landfills will be full in about ten years' time, with the SENT Landfill in Tseung Kwan O being the first one to be exhausted.

4. In order to reverse the trend of waste growth in Hong Kong, the Government launched the Waste Reduction Framework Plan in 1998 and set out a 10-year programme and targets to reduce waste by means of waste avoidance, minimization, recovery, recycling and re-use, as well as bulk reduction. However, even if we could achieve these waste reduction targets, there would still be a significant amount of waste left that requires disposal. In the most optimistic scenario, that is, with low waste growth, waste reduction targets achieved and public filling areas continue to be available, the three landfills will be full between 2012 and 2018. On the other hand, in the worst scenario, the three landfills will be exhausted between 2005 and 2008.

5. To secure sufficient waste disposal capacity for Hong Kong's continuous development, new landfills must be provided. In light of the numerous complicated constraints and influencing factors including environmental, socio-economic and technical ones, a long lead time of 10 years or more will be required to plan and develop new landfills. Therefore, we have to start the task now!

Approach in Developing New Landfills

6. Our approach to the problem is, firstly, to extend the useful lives of the existing landfills and, secondly, to search for feasible new landfill locations, followed by strategic assessments on environmental, socio-economic, technical and other factors of the identified locations. Waste management experts, professional bodies and interested groups will be consulted throughout the

process to seek their views on the landfill development strategy.

7. The Environmental Protection Department (EPD) has reviewed the extension potential of the existing three landfills and identified several possible schemes to expand them in their vicinity. If these schemes are all implemented, they can increase the landfill lifespan by about six to ten years. They are now being studied for environmental acceptability. However, this is not enough to meet our long-term needs and new landfills have to be developed to succeed them in time.

8. At the same time, EPD is conducting a territory-wide constraint analysis within Hong Kong. Different development constraints, including land use zoning, country/marine parks and conservation areas, infrastructure and heritage, water catchment and fisheries areas are studied and areas of absolute exclusion are mapped out. After excluding the constrained areas, EPD is now considering the remaining unconstrained areas with sufficiently large size for locating new landfills. The preliminary findings of this exercise will be presented at the view-sharing meeting.

9. Developing landfills in the unconstrained areas is also subject to a lot of influencing factors. Each area has its own merits and limitations that need to be considered as a whole to determine its feasibility for developing landfill. Typical factors to be considered include potential impacts on nearby environment, development and commercial activities, nature conservation, visual impact, land availability, engineering difficulties and operational problems.

Next Steps

10. EPD will divide the unconstrained areas into smaller portions and carry out strategic environmental assessment on them to compare their overall performance and desirability for developing landfills.

11. View-gathering sessions with experts, professional bodies and interest groups will be conducted throughout the assessment process. Consultation with the Advisory Council on the Environment and the general public will then follow at an appropriate time when results are available.

Views Being Sought

12. We appreciate views and comments on our approach, methodology and next steps in landfill development discussed above.

13. We welcome ideas and suggestions to help provide a robust strategy for landfill development in Hong Kong.



Plate 1

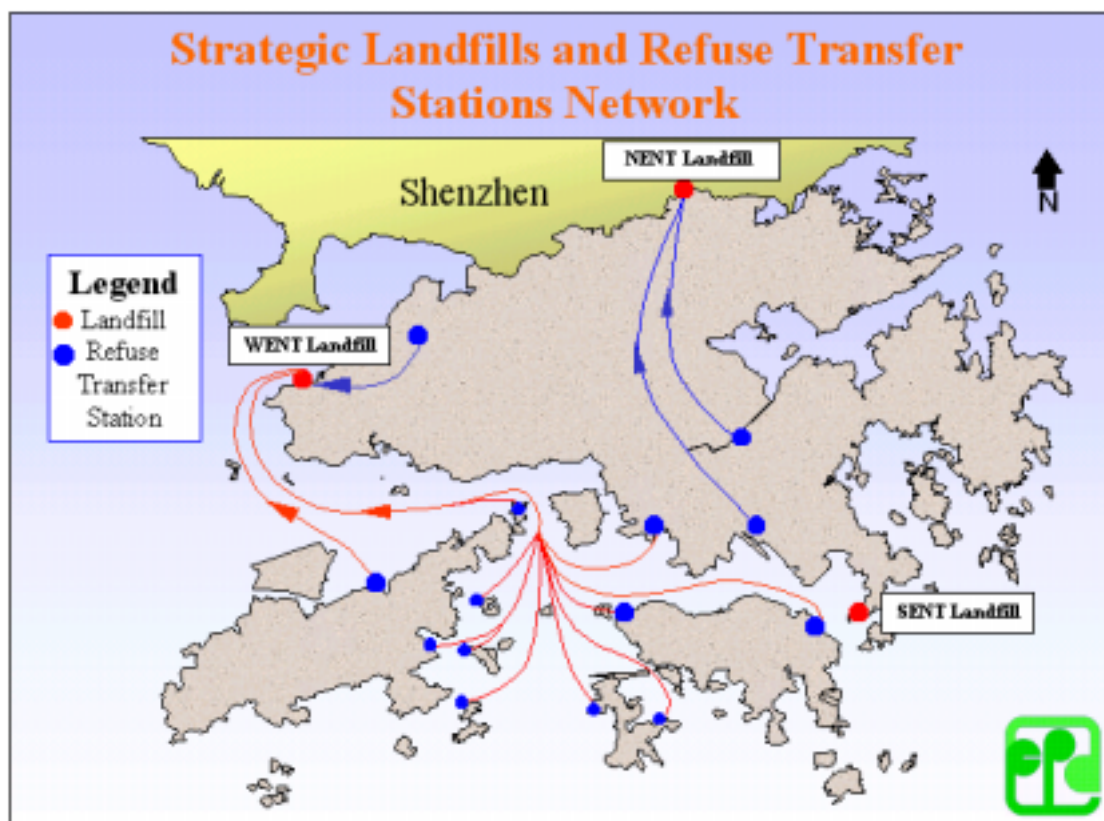


Plate 2

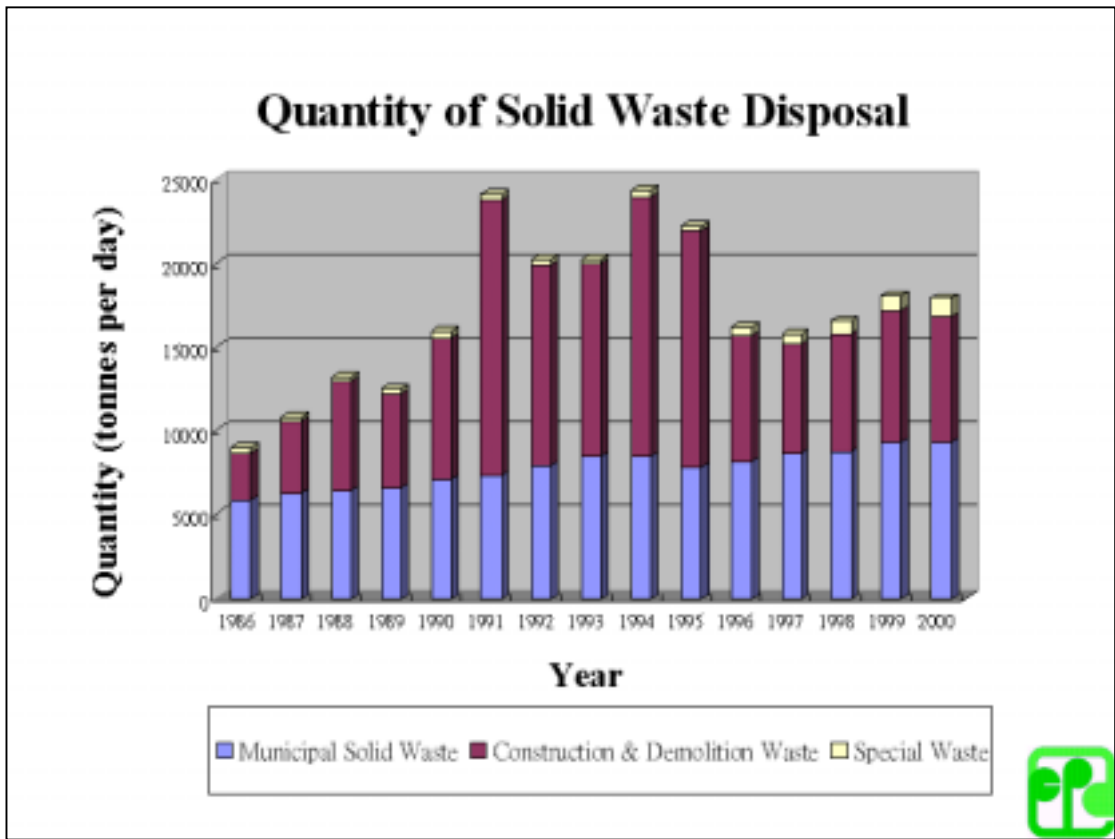


Plate 3



Plate 4

Waste Reduction Framework Plan (launched in November 1998)



Objectives

- Promote waste minimisation and resource recovery
- Prolong landfill life
- Optimise waste management costs



Plate 5

Waste Management Hierarchy

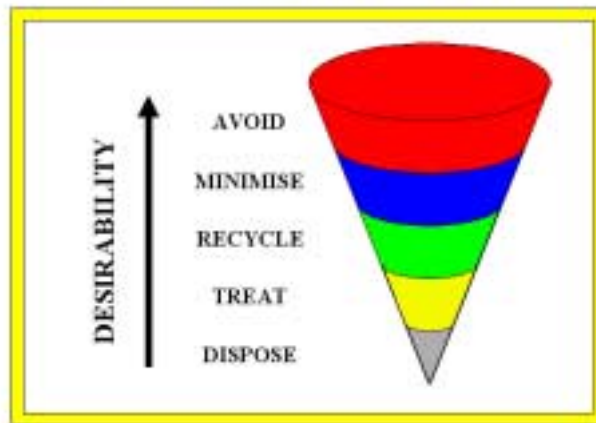


Plate 6

Waste Reduction Target Municipal Solid Waste



Plate 7

Void Space Consumption (end 2000)

<u>Landfills</u>	<u>Design Capacity</u>	<u>Percentage Consumption</u>	<u>Remaining Capacity</u>
SENT	43.1 Mm ³	34%	28.6 Mm ³
NENT	35.0 Mm ³	20%	28.1 Mm ³
WENT	61.9 Mm ³	15%	52.8 Mm ³



Plate 8

Landfill Life Expectancy

	<u>Optimistic Scenario</u>	<u>Pessimistic Scenario</u>	<u>Worst Scenario</u>
Waste Growth	Low	High	High
Achieve Waste Reduction Targets	✓	✗	✗
Sufficient Public Fill Outlets	✓	✓	✗
SENT Landfill	2012	2010	2005
NENT Landfill	2016	2013	2007
WENT Landfill	2018	2013	2008



Plate 9

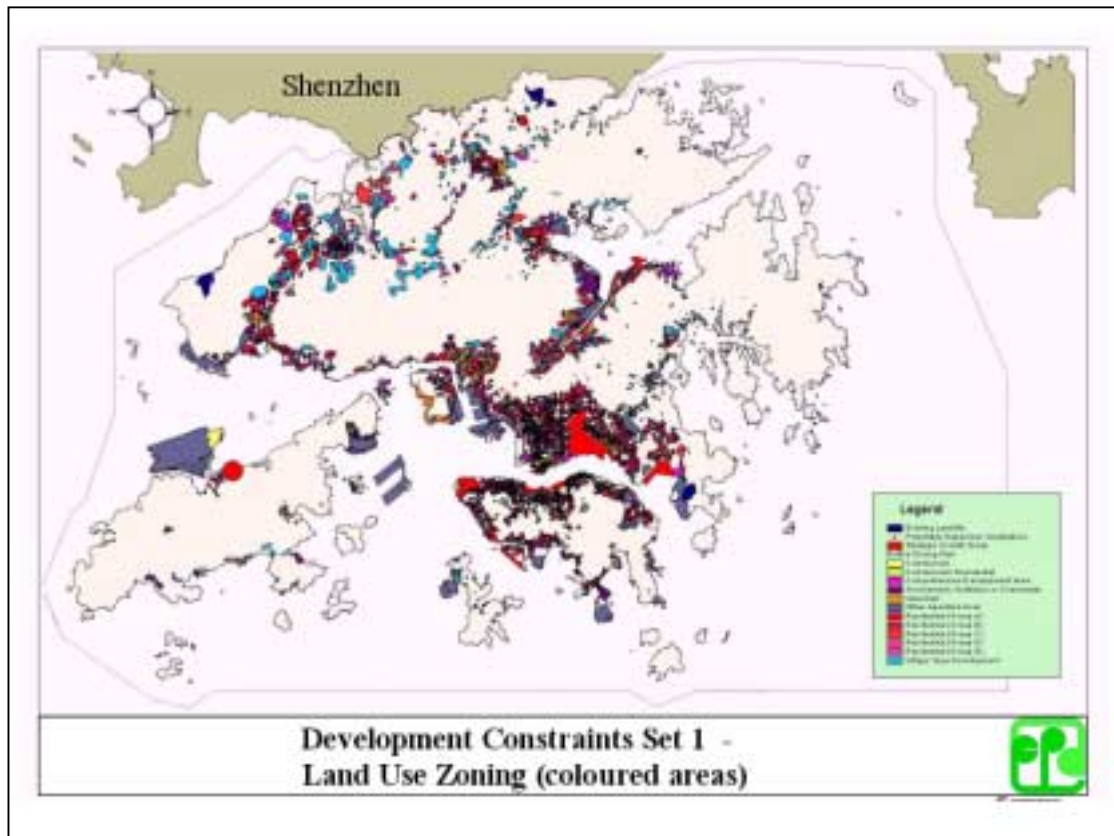


Plate 10

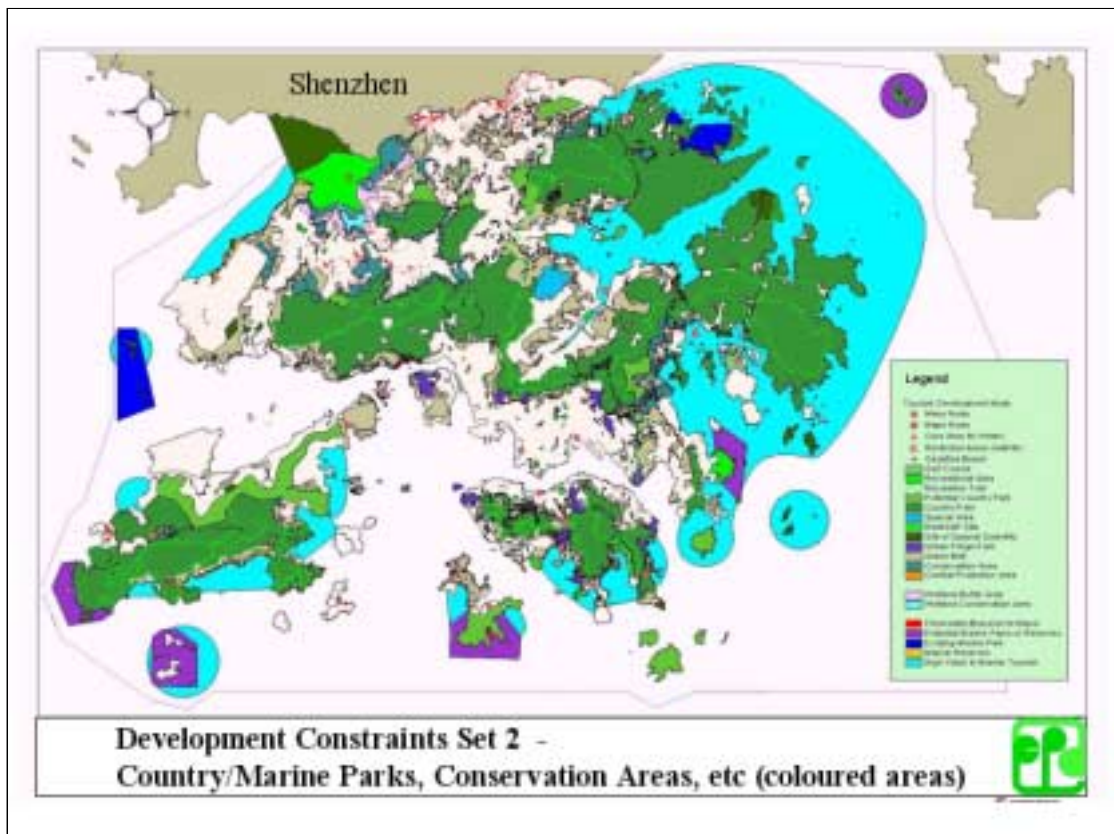


Plate 11

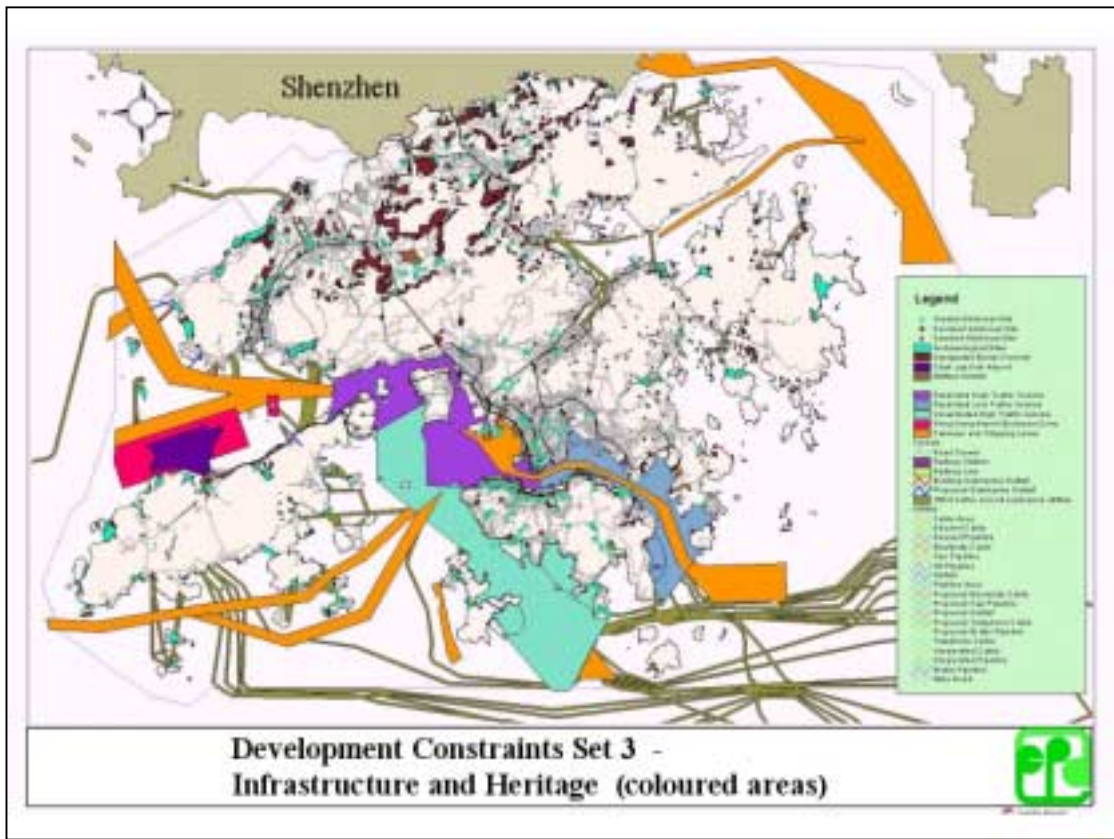


Plate 12

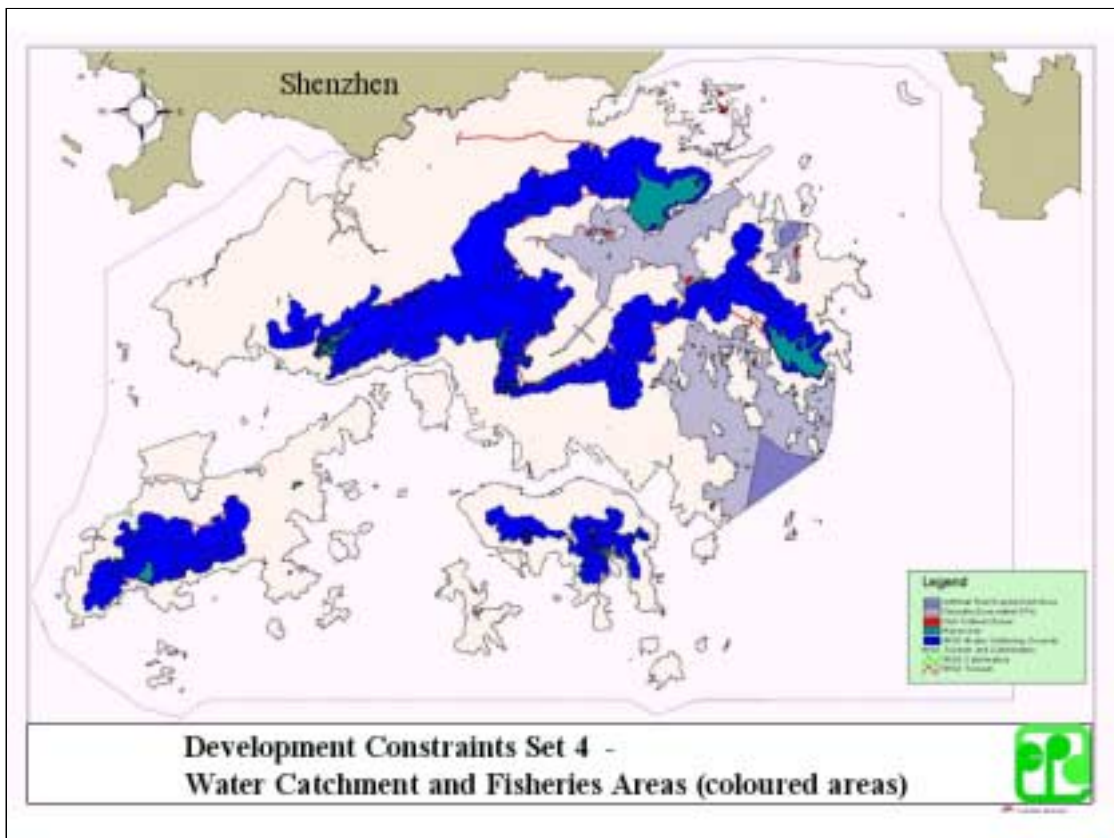


Plate 13

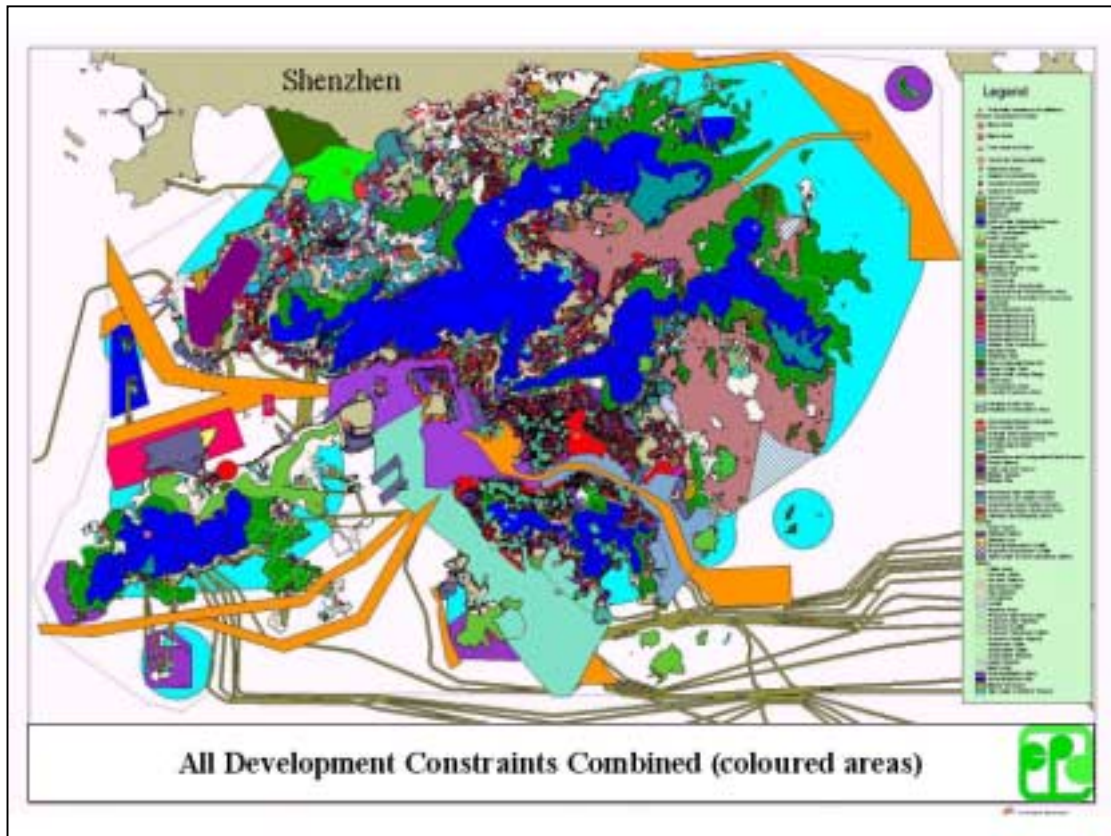


Plate 14

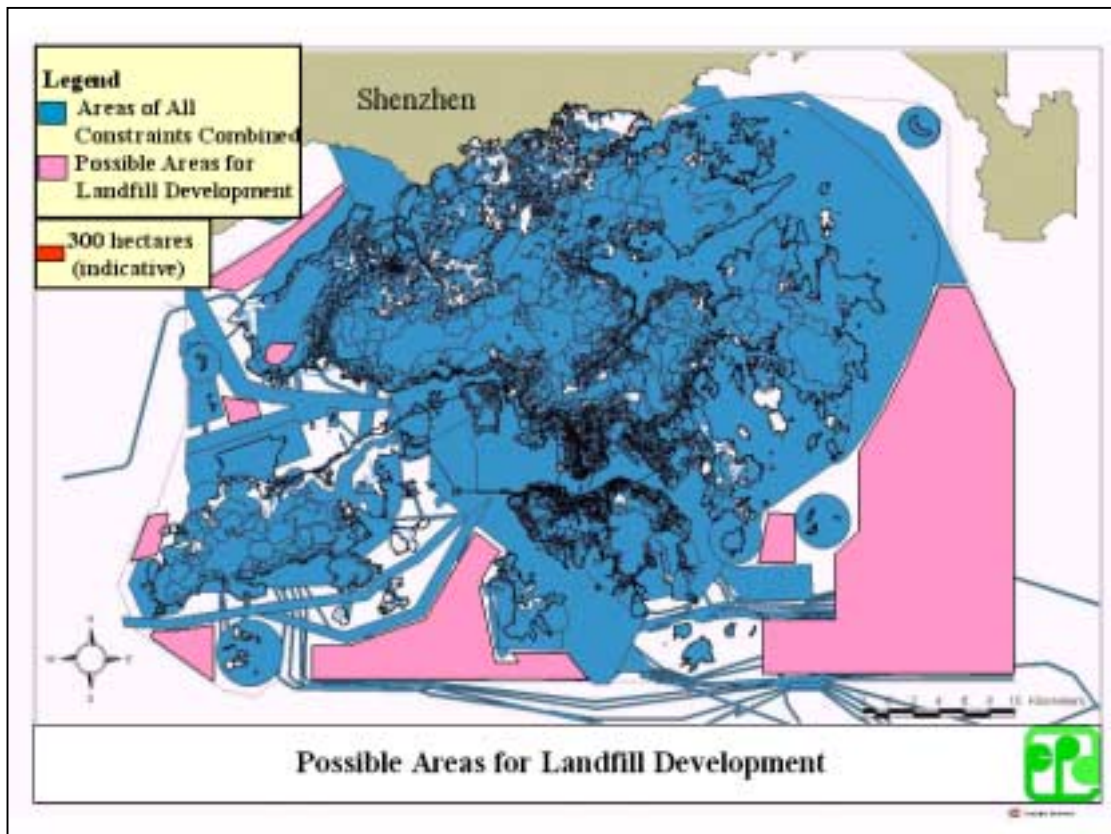


Plate 15