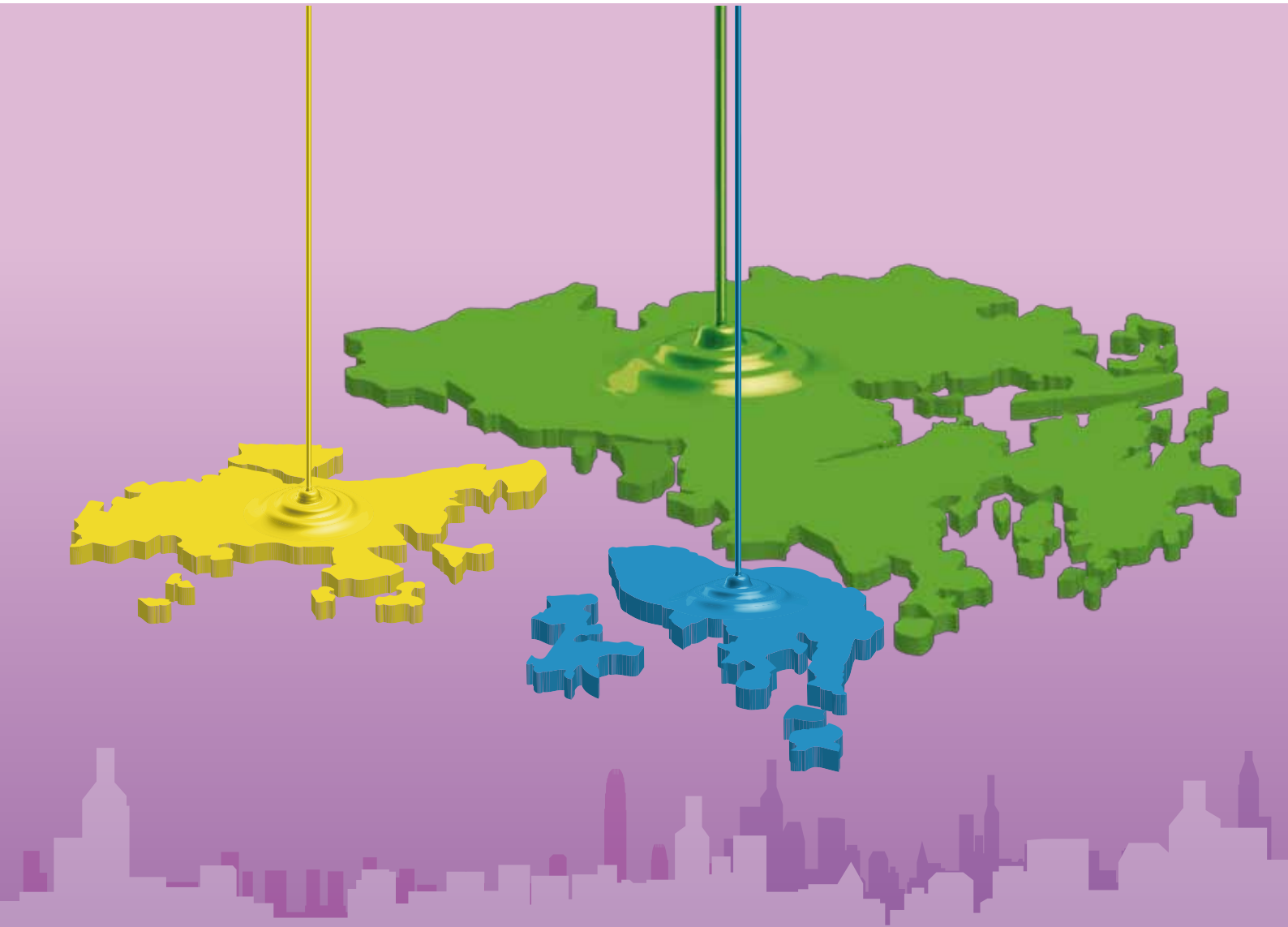
THE HONG KONG INSTITUTE OF SURVEYORS
香港測量師學會

The Hong Kong Institute of Surveyors

Annual Conference 2012

15th September 2012 (Saturday)
Grand Ballroom, Conrad Hong Kong, Pacific Place, 88 Queensway, Hong Kong



"Development, Supply, and Utilization of Land in Hong Kong"

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Message from Guest-of-Honour

香港特別行政區政府
運輸及房屋局局長

SECRETARY FOR TRANSPORT AND HOUSING
Government of the Hong Kong Special Administrative Region

The Hong Kong Institute of Surveyors
Annual Conference 2012 –
"Development, Supply, and Utilization of Land in Hong Kong"
Congratulatory Message from
Prof the Hon Anthony CHEUNG Bing Leung, GBS, JP
Secretary for Transport and Housing
Transport and Housing Bureau
HKSAR Government

Housing currently tops the list of livelihood issues of public concern. It is at the forefront of Chief Executive Leung Chun-ying's policy agenda.

Movements in the housing market affect not just the economic prospect of society, but also the affordability of many ordinary people in securing a stable home. To enhance the sense of belonging in society, the Government is keen to make housing more affordable and accessible to different sectors and to establish a housing ladder to support home ownership and social mobility.

At present, half of our households live in public housing – either public rental housing or subsidized home ownership of one form or another. As housing prices and rentals remain high, there is more to be done to meet housing demands through public housing, while the Government would adopt a balanced approach to increase the supply of public housing on the one hand and maintain the stability of the private housing market on the other.

There is a wide consensus in society to increase the supply of land to meet housing and other community needs. Land supply involves not just the development and formation of new lands, but also the adoption of suitable land use, planning and other policy tools to achieve an optimal utilization of available land resources and urban space.

The Government plans to launch a new round of Long-Term Housing Strategy review in the near future (the last one took place over a decade ago). In the review process, which will systematically assess the overall housing needs across sectors, we look forward to an active engagement with the public, in particular professional bodies like the Hong Kong Institute of Surveyors.

This Conference, with its theme on "Development, Supply, and Utilization of Land in Hong Kong", is therefore a most timely platform for experts and professionals from relevant fields, both outside and within government, to explore various pertinent issues. The views and ideas exchanged will no doubt provide useful insight to our policymaking. I wish this Conference a great success.

Prof the Hon Anthony CHEUNG Bing Leung, GBS, JP
Secretary for Transport and Housing
Transport and Housing Bureau
HKSAR Government

Message from the President

The Hong Kong Institute of Surveyors Annual Conference 2012
"Development, Supply, and Utilization of Land in Hong Kong"

On behalf of the Hong Kong Institute of Surveyors, I would like to extend a warm welcome to all participants to the HKIS Annual Conference 2012. I am so excited to meet so many practitioners, experts, representatives from different sectors, sharing and exchanging views on the topic of "Development, Supply, and Utilization of Land in Hong Kong".

Hong Kong is a small city but densely populated, therefore land in the city has always been a valuable resource. There have long been keen competition for developable land for shelters, businesses, rooms for leisure activities etc. The projection of expanding population and people's higher expectation to living space and environment will further drive up the demand for land in the next decades. Considering the limited supply of the existing developable land in Hong Kong, it is utmost important to make the best use of our valuable resource for the development and the betterment of our society. HKIS considers this is an appropriate time to offer a platform and gather industry practitioners, government officials and academics to review the current situation, to exchange views related to development, supply, and utilization of land in Hong Kong from different angles, and at best, to generate some inspiring ideas and implications for the city's future direction on land development, supply and utilization.

Throughout these years, the conference has been supported by many distinguished speakers. This year, we are honoured to have Professor the Hon Anthony CHEUNG Bing Leung, GBS, JP, Secretary for Transport and Housing of the HKSAR Government, to give us an opening keynote speech, and also numerous reputable speakers in the industry looking into the topic from their distinctive perspectives. I am sure that you will find the conference informative and interesting through exchanging opinions and thoughts with our guests and speakers.

Finally, I would like to taking this opportunity thank all speakers, moderators, sponsors, guests, Organizing Committee led by the Vice President Sr Simon KWOK to make this a wonderful event.

Sr Serena LAU Sze Wan
President, The Hong Kong Institute of Surveyors (2011-12)

Conference Programme

Time	Program / Topic	Speaker
08:30 – 09:00	Registration	
09:00 – 09:10	**Welcome Speech**	**Sr Serena LAU Sze Wan** President The Hong Kong Institute of Surveyors
09:10 – 09:30	**Opening Keynote Speech**	**Prof the Hon Anthony CHEUNG Bing Leung, GBS, JP** Secretary for Transport and Housing Transport and Housing Bureau HKSAR Government
09:30 – 09:35	Souvenir Presentation to Guest-of-Honour	
09:35 – 10:00	Coffee Break	
10:00 – 10:30	**Urban Renewal: the New Horizon**	**The Hon Barry CHEUNG Chun Yuen, GBS, JP** Chairman Urban Renewal Authority
10:30 – 11:00	**Utilization of Land for Public Housing Development - Past and Present**	**Sr Marco WU Moon Hoi, SBS** Vice-Chairman Hong Kong Housing Society
11:00 – 11:30	**More and Faster Land Supply – Yes but How**	**Sr Augustine WONG Ho Ming, JP** Executive Director Henderson Land Development Company Limited
11:30 – 11:40	Q & A	**Moderator: Sr Tony WAN Wai Ming** Honorary Secretary General Practice Division The Hong Kong Institute of Surveyors
11:40 – 11:45	Souvenir Presentation to Speakers and Moderator	
11:45 – 13:00	Lunch	
13:00 – 13:30	**Myths and Facts about Land Utilization in Hong Kong**	**Mr Jimmy LEUNG Cheuk Fai, JP** Director of Planning Planning Department HKSAR Government
13:30 – 14:00	**Land Supply Strategy – Missing Pieces in the Jigsaw**	**Sr LAU Chun Kong** International Director Jones Lang LaSalle
14:00 – 14:30	**Controls – For Better Development?**	**Sr Tony TSE Wai Chuen** Director Brand Star Limited
14:30 – 14:40	Q & A	**Moderator: Sr Spencer KWAN Tin Che** Past Chairman Quantity Surveying Division The Hong Kong Institute of Surveyors
14:40 – 14:45	Souvenir Presentation to Speakers and Moderator	
14:45 – 15:05	Coffee Break	
15:05 – 15:35	**The Development and Supply of Land in Hong Kong**	**Ir HON Chi Keung, JP** Director of Civil Engineering and Development Civil Engineering and Development Department HKSAR Government
15:35 – 16:05	**Land Supply in the Urban Area – Utilization and Problems**	**Sr LAU Chi Keung, MH, JP** Director C K LAU & Associates Limited
16:05 – 16:35	**Urban Land Use...and...Housing Consumption? A Revisit**	**Sr Prof Eddie HUI Chi Man** Professor of Real Estate Department of Building and Real Estate The Hong Kong Polytechnic University
16:35 – 16:45	Q & A	**Moderator: Sr Dr CHAN Man Wai** Executive Director, Project Delivery West Kowloon Cultural District Authority
16:45 – 16:50	Souvenir Presentation to Speakers and Moderator	
16:50 – 17:00	**Closing Remarks**	**Sr Simon KWOK Chi Wo** Chairman Annual Conference Organizing Committee The Hong Kong Institute of Surveyors
17:00	End of Conference	

Speakers and Papers

The Hon Barry CHEUNG Chun Yuen, GBS, JP
Chairman, Urban Renewal Authority

Mr Cheung, Chairman of Hong Kong Mercantile Exchange, has been Chairman of the URA since 2007 and a board member since 2001. He is currently a Non-official Member of the Executive Council of Hong Kong, Chairman of the Standing Committee on Disciplined Services Salaries and Conditions of Service, an Alternate Chairman of the Pay Trend Survey Committee, a member of the Standing Commission on Civil Service Salaries and Conditions of Service and a member of the Honours Committee. He is also the Chairman of the Board of Directors and an independent non-executive director of UC RUSAL.

Mr Cheung was a former Chairman of the Corruption Prevention Advisory Committee of the ICAC. He was a full-time member of the Central Policy Unit on secondment from McKinsey & Company. He was a consultant with McKinsey & Company in the United States and Asia.

Mr Cheung received a Bachelor of Science degree with First Class Honours in Mathematics and Computer Science from the University of Sussex and an MBA from the Harvard Business School.

Urban Renewal: the New Horizon

Mr Cheung will give a brief overview of the work of the URA and how the Authority tackles one of the most pressing social problems – urban decay in Hong Kong and how URA's work can contribute to solving the problem of housing in Hong Kong.

Speakers and Papers

Sr Marco WU Moon Hoi, SBS
Vice-Chairman, Hong Kong Housing Society

Sr Marco Wu was graduated from the Hong Kong Technical College in 1967 and joined the civil service in the same year as Valuation Assistant III in the Rating and Valuation Department. He then joined the Housing Department as Senior Estate Surveyor in 1977.

He was promoted to Deputy Director of Housing in 1996 and took up the post of Director of Buildings in March 2003, a position which he held until his retirement from the civil service in 2006.

During his 26 years with the Housing Department, Sr Wu was one of the key officers in formulating and implementing the Home Ownership Scheme. He was instrumental in promoting the success of the commercial centres under the Housing Authority, and contributed significantly in formulating and reviewing major housing policies.

As Director of Buildings, he led the Department to effectively tackle the problem of unauthorized building works, and take a major step forward in the promotion of green buildings in Hong Kong. He also played an important role in promoting and increasing public awareness of the importance in proper management and maintenance of private buildings.

Sr Wu is a veteran professional surveyor. He was qualified as a Chartered Surveyor in 1971 and became a Fellow of both the Hong Kong Institute of Surveyors (HKIS) and The Royal Institution of Chartered Surveyors in 1984. He obtained a Master's Degree in Social Sciences in the University of Hong Kong in 1983, and was the President of HKIS in 1991/92.

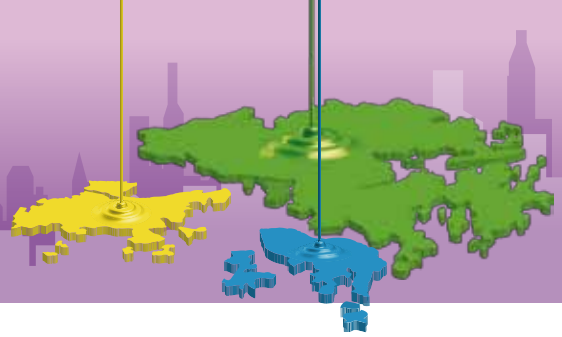
At present, Sr Wu is the Vice-Chairman of the Hong Kong Housing Society, a Member of Land and Development Advisory Committee, a Member of the Elderly Commission, and an Honorary Adviser of the Hong Kong Coalition of Professional Services. He is also a past President of the Hong Kong Institute of Real Estate Administrators, and an Honorary Research Fellow of the City University of Hong Kong.

In recognition of his distinguished and dedicated service to the Hong Kong community, Sr Wu was awarded Silver Bauhinia Star in 2006.

Utilization of Land for Public Housing Development – Past and Present

Starting from the construction of resettlement blocks to rehouse the fire victims and squatters, to the provision of comprehensively designed public rental housing and home ownership scheme estates for the lower and middle income families, the Hong Kong Government has today provided decent and affordable housing for half of Hong Kong's population. The development of such a massive housing programme requires a sizable and continued supply of land.

In his presentation, the speaker reviews the various ways previously adopted by the government in ensuring the adequate supply of land for public housing development. He also highlights the problems that the government has been facing in recent years in securing land for public housing, and the possible way forward to resolve the problems.



Population & Housing Stock in Early Post-war Period

Year	Population
1945	600,000*
1951	2,000,000*

Year	Housing Stock
1946	22,716 domestic buildings
1950	24,621 domestic buildings

* estimated figures

Source: HK Census & Statistics Department

Source: Annual Reports of Urban Council

Main Source of Land Supply for Public Housing Development

(i) Clearance of Squatter Areas

Speakers and Papers

"When the first phase of resettlement buildings at Shek Kip Mei and at Tai Hang Tung were completed, the number of places available already exceeded the total number of fire victims. In other words, the government had extra homes to let, and plans were made and implemented to demolish squatter huts and resettle their residents. It was no longer necessary to stretch resources for post-disaster follow-ups." - *1954/55 Annual Report, Resettlement Department*

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"When the effectiveness of the pilot scheme proven, the government now formally and systematically implemented the resettlement programme. Squatter huts on the outskirts of urban areas were demolished, and multi-storey buildings were put up to resettle the residents. The land left over was then used to develop urban and industrial facilities, as well as private residences." – *"From Shelter to Home", Hong Kong Housing Authority 1999*

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DIAMOND HILL in 1983

Not to Scale

LEGEND

Squatter / Cottage areas

DIAMOND HILL in 2003

Not to Scale

LEGEND

Previous Squatter / Cottage Areas

Public Rental Housing (1,500 Flats) /
Home Ownership Scheme (4,982 Flats) /
Private Sector Participation Scheme (2,230 Flats) /
Sandwich Class Housing Scheme (798 Flats) /
Private Housing (1,870 Flats)

Speakers and Papers

SHAU KEI WAN in 1982

Not to Scale

LEGEND
Squatter / Cottage areas

SHAU KEI WAN in 2004

Not to Scale

LEGEND
Previous Squatter / Cottage Areas
Public Rental Housing (7,500 Flats) /
Home Ownership Scheme (5,765 Flats)

STANLEY in 1985

Not to Scale

LEGEND
Squatter / Cottage areas

STANLEY in 2004

Not to Scale

LEGEND
Previous Squatter / Cottage Areas
Public Rental Housing (900 Flats) / Home Ownership Scheme (1,344 Flats)

Speakers and Papers

Main Source of Land Supply for Public Housing Development

(ii) Clearance of Cottage Areas and Temporary Housing Areas

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Main Source of Land Supply for Public Housing Development

(iii) Development of New Towns

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On 18 October 1972, Governor MacLehose announced a 10-year Public Housing Programme to provide self-contained housing for 1.8 million people, and the development of new towns.

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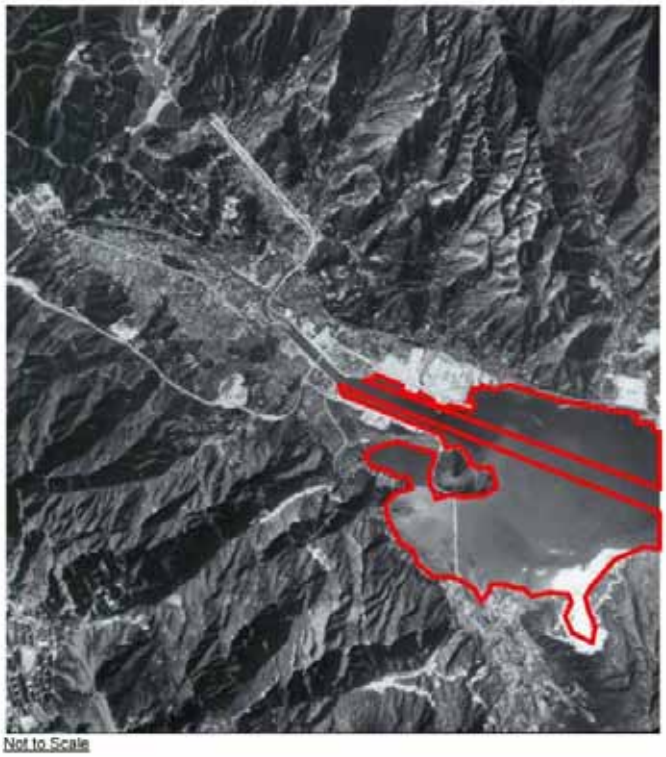
SHA TIN in 1973



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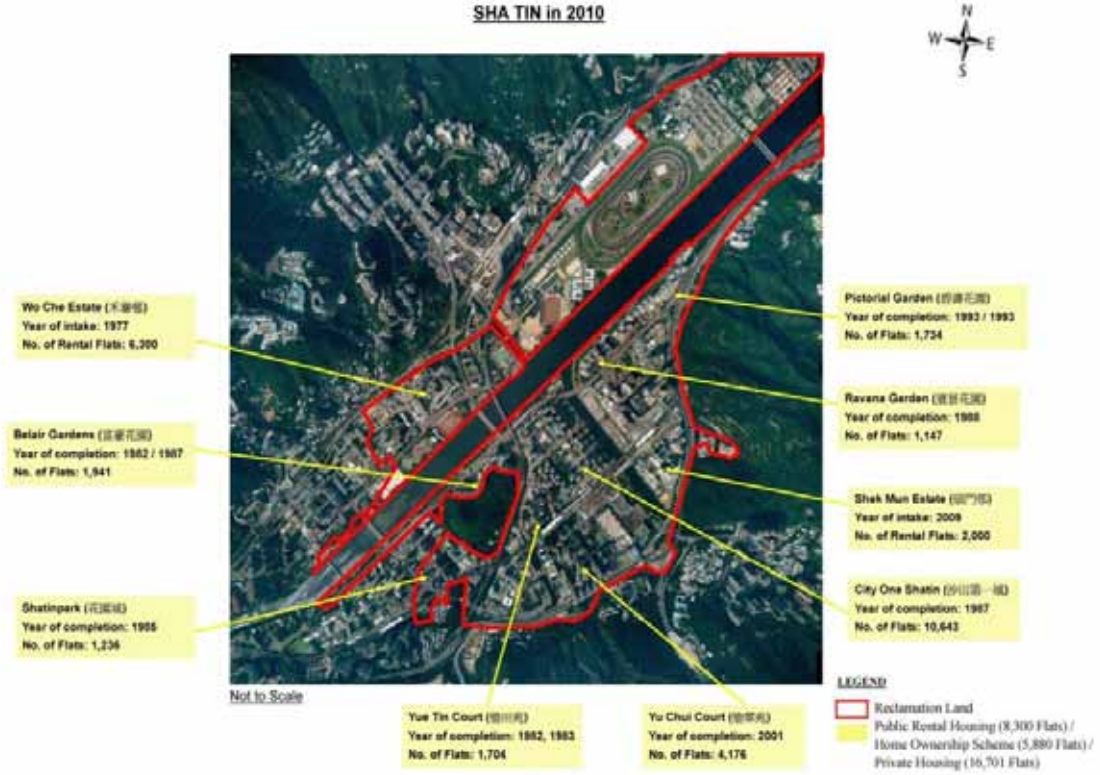
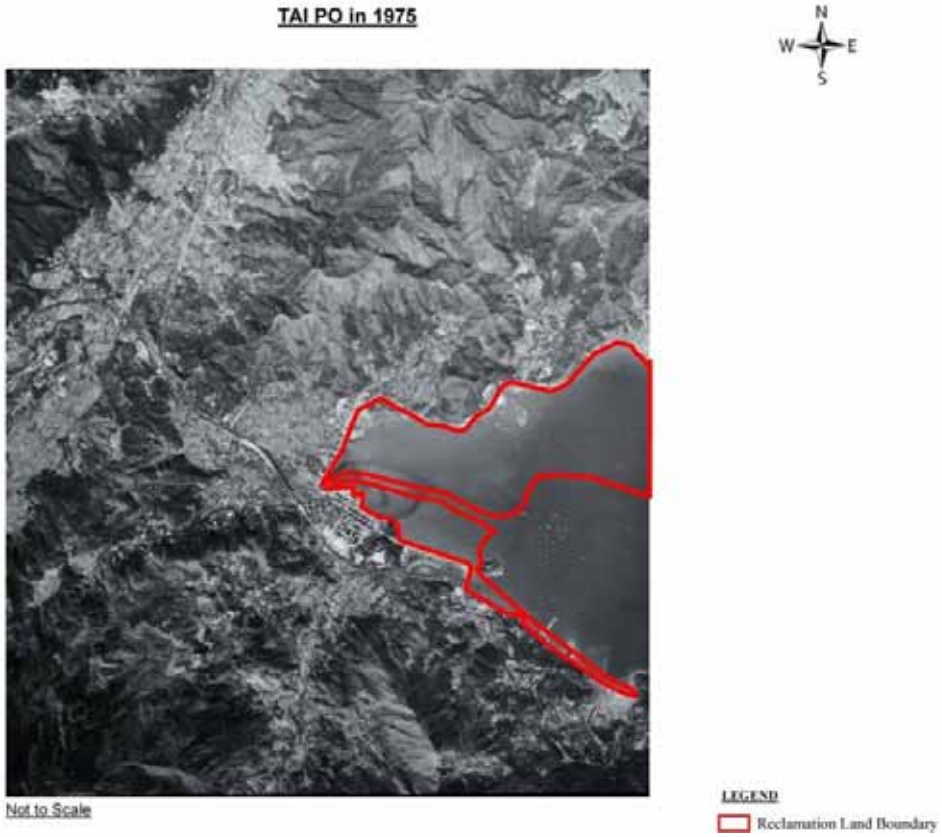
LEGEND

Reclamation Land Boundary

Speakers and Papers





TAI PO in 2010

Not to Scale

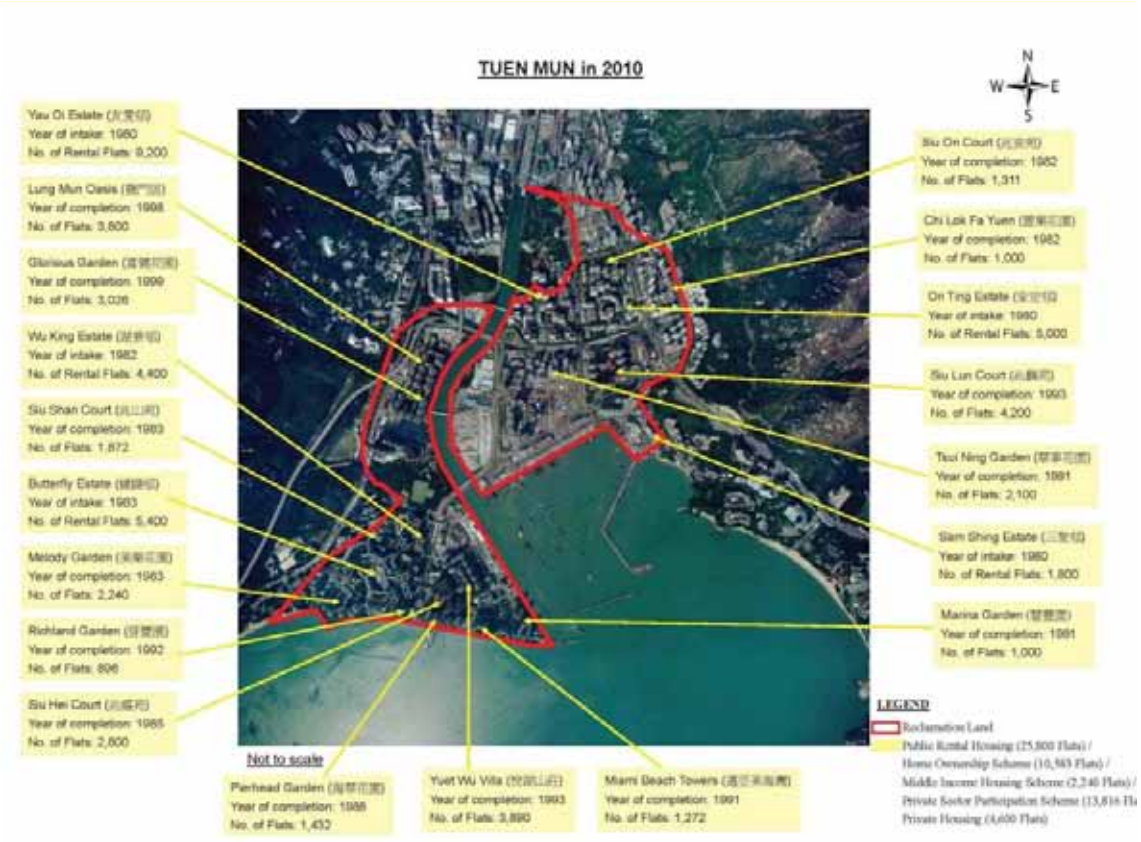
TUEN MUN in 1972

Not to scale

LEGEND

Reclamation Land Boundary

Speakers and Papers



Main Source of Land Supply for Public Housing Development

(iv) Redevelopment of Old Estates

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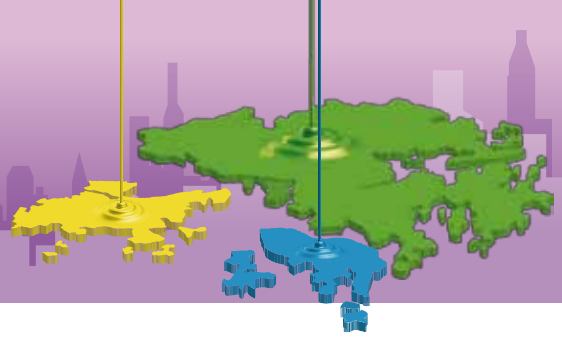

1972 – Redevelopment of Mark I and II block at Lower Shek Kip Mei Estate

1985 – Launch of Extended Redevelopment Programme for 26 Sub-standard blocks

1988 – Launch of the Comprehensive Redevelopment Programme

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Summary of Land Supply for Public Rental Housing Development (completion up to 2011)

Source	%*
Squatter Areas, CAs & THAs	21
Redevelopment of Old Estates	22
Reclaimed Land	26
Quarries, Agricultural Land & Others	31
* *In terms of number of flats*	100

Source: Housing Authority and other publications

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Speakers and Papers

Problems in Land Supply Today

1. Urban Squatter Areas cleared
2. THAs and CAs cleared
3. Older PRH Estates redeveloped
4. Existing New Towns near maturity

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Land Usage Distribution (as at end 2011)

Class	Approx Area (km^2)	%
Residential		
Private Residential	25	2.3
Public Residential (including HOS/PSPS)	16	1.4
Rural Settlement	35	3.2
	(76)	(6.9)
Commercial	4	0.4
Industrial	26	2.3
Agriculture	68	6.1
Woodland/Shrubland/Grassland/Wetland	738	66.5
Others (G/IC, Transportation, Open Space, etc)	196	17.8
	1108	100

Source: Hong Kong Yearbook 2011

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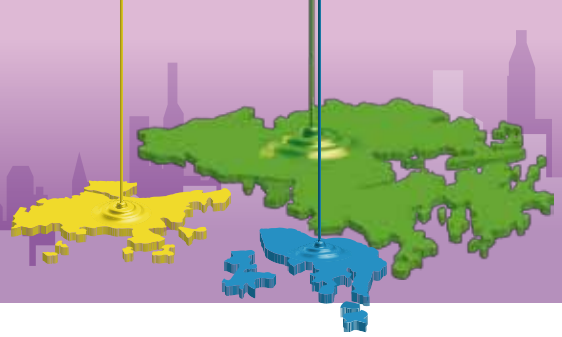

Main Source of Land Supply for Public Housing in Future

1. Rezoning of industrial land
2. Rezoning of "G/IC" sites
3. Rezoning of agricultural land
4. Reclamation outside Victoria Harbour
5. Development of abandoned quarries
6. Development of green belt areas in NT
7. Development of new areas, including Kai Tak, Tung Chung, Kwu Tung North, etc

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The Way Forward

1. To review "Long Term Housing Strategy"

2. To establish "Long Term Land Supply Strategy"

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Speakers and Papers

Sr Augustine WONG Ho Ming, JP
Executive Director, Henderson Land Development Company Limited

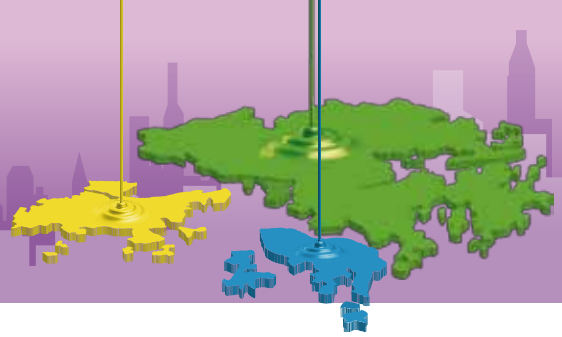
After graduating from the then Hong Kong Polytechnic studying General Practice Surveying, Sr Augustine Wong Ho Ming joined the then Collier Petty, Chartered Surveyors, a leading real estate consultancy firm and was handling valuation of properties. He became Executive Director in 1991 and was in charge of the Investment Department and PRC business. He joined Henderson Land Group in November, 1996 and was appointed as the Executive Director of Henderson Land Development Company Limited in 2010. His main duties include acquisition of development sites by private negotiation, public auction and public tender, negotiation with the government on conversion of agricultural land to building land and town planning applications.

He is a Fellow of the Hong Kong Institute of Surveyors, as well as a Registered Professional General Practice Surveyor and holds a Master Degree of Science in E-Commerce for Executives and a Master Degree of Economics.

He is currently Member of the Real Estate Services Training Board of Vocational Training Council, Member of the Legal Sub-Committee of the Real Estate Developers Association of Hong Kong and Member of the Departmental Advisory Committee of the Building and Real Estate Department of the Hong Kong Polytechnic University. He was Member of the Hong Kong Housing Authority and its Commercial Properties Committee and Subsidised Housing Committee, Member of the Land and Building Advisory Committee, Member of the Estate Agents Authority since its establishment in 1997 as well as the Chairman of the Licencing & Practice Committee, one of its four standing committees, Part-Time Member of the Central Policy Unit, Member of Estate Agents Appeal Board and Member of Commission on Strategic Development Committee on Economic Development and Economic Cooperation with the Mainland.

More and Faster Land Supply – Yes but How

Land supply in Hong Kong, especially in urban areas, is limited but demand on public and private housing is very keen. 10 directions have been identified by the government as the potential major supply of housing land in the medium to long term. Regarding rezoning of industrial sites owned by private owners, the chance of success will be very slim. Major changes in the policy on premium assessment are necessary to expedite redevelopment of aged industrial buildings. As for the proposed Reclamation outside Victoria Harbour, it will be an up-hill battle for the government in convincing people to accept the proposal. The most effective means amongst the remaining directions are new development areas (NDAs) which have area of about 1500ha in aggregate. With co-operation by both the government and the private sector, people can benefit from the early start of the NDAs by having early production of public rental units and affordable housings.



Land supply is a topical issue and there have been a lot of discussions on the ways to enhance land supply. In the blog of the Financial Secretary published on 5th August 2012, we can see what are being done by the government in general and more interestingly, the reasons explaining the reduction in housing supply indirectly. In the past 2 years, the government has coordinated various policy bureaus and departments in getting more housing sites; providing stable land supply; and establishing long term land bank through different strategies. The development density tends to be very high in most cases because of the scarcity of land in Hong Kong. Thus, once the government proposes a site for housing development, people will object on the grounds of wall-effect, visual impact, adverse effects on air ventilation, etc. There are other grounds of objection not mentioned by the Financial Secretary in the blog, namely conservation, environmental concerns, ecological sensitivity, collective memory, etc.

It is beyond doubts that the government is working hard in enhancing land supply at this moment. However, it is still unclear how the reasons used by the previous government in reducing development intensity in the past can be overcome by the current government in such short span of time. If people are not willing to accept density change or a compact living lifestyle in proximity to the major public transport nodes, it will be an up-hill battle for the government to get more land for housing development. Though the issue of enhancing land supply is caused mainly by the surge in property price in the private sector, the keen demand on public rental housing and subsidised housing such as Home Ownership Scheme must not be overlooked. In order to understand the situation in the public housing, it may be of interest to compare the situation in 1988 and the current situation. 1988 was the year of reform of the Housing Authority. After the reform, the Housing Authority was chaired by a non-official but it has been chaired by an official again since 2003. During the year of 1988, the Housing Authority produced 32,200 rental units, and offered for sale 15,437 units under the Home Ownership Scheme and Private Sector Participation Scheme. The private sector produced 37,700 units in 1988. In 2011-12, the production of public rental units was 11,186 while the production in the private sector in the year 2011 was 9,400. In respect of the private sector, it is clear that people has great concern on such low supply but strong demand. As for the public rental units, huge reduction in supply doesn't mean lower demand. The best indicator may be the waiting list in respect of the public rental units. The following table shows the figures of recent years:

As at end of the period	2000/01	2005/06	2010/11	12/2011
No of Live Applicants	108,000	97,000	152,000	175,900

The number of households in the waiting list has increased significantly since year 2000. Unless the production of public rental units can be increased substantially and quickly, it will take about 16 years to sort out all those on the current waiting list based on the production of 11,186 in 2011-12. Ironically, the latest production is only about one-third of 1988 about one-quarter of a century ago. Shortage in supply of housing sites is the main reason for the reduction in production. We are not short of financial resources but really short of housing land, in particular high density housing sites. Low density housing site is good for private development. As for public housing development, proximity to major transport node is important and usually the development intensity is the highest at such convenient locations. Bearing in mind the income level and employment patterns, people living in public rental estates is keen to be in proximity to major public transport nodes such as MTR stations.

The followings are the potential major supply of housing land in the medium to long term identified by the government:

1) Kai Tak Development Area and Neighbouring Land, 320ha;
2) Western Kowloon Cultural District, 40ha;
3) North East New Territories New Development Areas (NENT NDAs), 787ha;
4) Hung Shui Kiu New Development Area, 450ha;
5) 4 Quarry Sites, 168ha;
6) Tung Chung Remaining Areas, 246ha;
7) Reclamation outside Victoria Harbour;
8) Relocation of the Shatin Sewage Treatment Works to cavern, 28ha;

Speakers and Papers

9) Relocation of Mount Davis & Kennedy Town Fresh Water Service Reservoirs to cavern, 2ha;

10) Rezoning of industrial land, green belt, agricultural land for non-industrial and housing use, 260ha.

In addition, housing supply will also come in from Urban Renewal Authority and Mass Transit Railway Corporation projects which are more on short term to medium term.

Amongst the above 10 directions to enhance land supply, if both public and private housing supply are taken into account together, some of the sites should be disregarded. For example, we don't expect public housing will be provided in the Western Kowloon Cultural District and the services reservoirs. As for the rezoning of industrial sites, only those sites which are still controlled by the government will be realistic. For those owned by the private owners, the chance will be very slim unless there will be a major change in the land policy. It is a well established policy of the government that full market premium will be required to be paid by the private owners for redevelopment of industrial buildings to residential development. Such premium will reflect the difference in land value between industrial use and residential use. On such premises, it is difficult to expect that there will be enough financial incentives for private owners to proceed with redevelopment of aged industrial buildings. The following example can illustrate the situation:

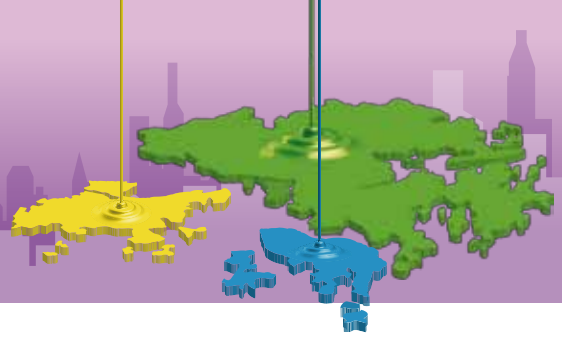
Location	Plot Ratio of Existing Bldg	Plot Ratio on Redevelopment
Tsuen Wan/ Kwai Chung	9.5	5.7 (C/R composite)
Kwun Tong	10	9 (C/R composite)

From the above table, it is obvious that there will be no gain in intensity upon redevelopment in most cases for aged industrial buildings.

Moreover, the prices for aged industrial premises in Tsuen Wan (about $2,000 psf G) and Kwun Tong (about $3,000 psf G) are usually higher than the corresponding industrial land value. In addition, most of the aged industrial buildings are under the problem of fragmentation of ownership. Unless huge premium are offered by private developers, it is so difficult, if not impossible, to acquire sufficient interest in the buildings on private negotiation. Thus it is unreasonable to expect private developers will be interested in such projects. In order for redevelopment of aged industrial buildings to fly, the Urban Redevelopment Authority may be the proper candidate since sites can be granted to URA at nil premium. However, it is still necessary to handle the relocation of occupiers in the aged industrial buildings with care. Appropriate premises for qualified occupiers should be provided since not all occupiers will be able to find new premises for relocation. It is socially undesirable to force them to close down.

As for the proposed Reclamation outside Victoria Harbour, it is not expected that the people can accept it easily nowadays. There will be environmental, marine ecology, fisheries and objections from people nearby. Taking the proposed third runway of the airport as an example, even though the economical benefits are so huge, there are strong objections from the green groups. If the proposed reclamation is close to existing residential areas, we can easily assume there will be fierce objections from the residents on various grounds such as traffic, ventilations and lack of supporting infrastructures. Such cost effective and quick land production method in the old days may no longer work as before. Such change is well understood and probably not unreasonable.

Amongst the remaining directions, the most effective means are new development areas or new towns. Taking Kai Tak Development Area as an example, the expected productions of private and public housing units are 16,000 and 13,000 respectively within the planning area of 320ha. Only the New Development Areas will have area larger than Kai Tak Development Area. Thus the emphasis on new supply of housing land should be in these new development areas which have area of about 1500ha in aggregate. Besides, they are all located in areas either covered already or will be covered by mass transit system. For both public rental units and small to medium size private residential units, this advantage in transport infrastructure is definitely an important factor. For example, in the NENT NDAs, the latest figures for the public rental housing units and private housing units are about 23,134 and 30,666 respectively. Although no figures are stated in the study



brief for the Hung Shui Kiu NDA, we can estimate the rough supply as shown in the following calculations:

Target population	160,000
Average household	2.8
Total no of housing units	57,000 (about)
Public rental units	23,000 (about 40%)
Private housing units	34,000 (about 60%)

Note: Higher percentage of private housing units is to balance off the high percentage of public rental units in Tin Shui Wai.

The total public housing units from these two NDAs will be about 46,000 which is about 3.5 times the Kai Tak Development Area or 6.5% of the total stock of the public rental units. If the planned population in Hung Shui Kiu can be increased further, more housing units can be generated. With the pioneering project Qianhai in Shenzhen, there is huge room for new thoughts to be put into the planning of Hung Shui Kiu.

Therefore it is necessary for the government to implement the NDAs promptly. Thus the then Secretary for Development informed the Legislative Council in late June 2012 that the government intends to implement the NDAs by means of "Conventional New Town Approach". It means that the government will compulsorily acquire all the private land within the NDAs and dispose sites for private developments by means of public auction or tender. As for the public rental units, community facilities and infrastructure works, these will be carried out by the government and the Housing Authority. The government believes that these arrangements can speed up the development of the NDAs. However, as pointed out immediately by the members of the Legislative Council, it is questionable whether the government can resume private land for private projects. If there are legal battles on whether such resumption of private land is ultra vires, there will be significant delay in the implementation of the NDAs.

As a matter of fact, both resumption and in-situ land exchange have been adopted in all new town development such as Shatin, Fanling, Tuen Mun, Yuen Long, Tseung Kwan O, etc. The only exception is Tung Chung since all private developments are either part of the railway projects or on reclaimed land. Before the abolishment of the issuance of Letters A/B in 1983, Letters A/B were used in the resumption of private land in the New Territories for new town projects. Restricted tenders for the holders of the Letters A/B were held regularly for the disposal of private housing projects in new towns in order to redeem the Letters A/B issued by the government. Such restricted tender system was a form of non-in-situ land exchange de facto. Letters A/B were a form of I.O.U. issued by the government. Even in Tseung Kwan O, the land in the town centre for major commercial/residential complexes was disposed by means of Letter A/B tenders.

The in-situ land exchange system has been working very well for many years in the New Territories in parallel with resumption for public projects. Any change in this fundamental policy must be throughout considered and with all stakeholders consulted. With the Public Private Participation Scheme mentioned by the government beforehand, it may speed up the implementation of NDAs realistically. With co-operation by both the government and the private sector, early start of the NDAs can be done and people can benefit from it by having early production of public rental units and affordable housings.

Since majority of the supply of new housing units, in particular public rental units, will be coming from New Development Areas, it is necessary to consider carefully a prudent but speedy method of implementation. People are looking forward to the production of housing units as soon as possible.

Speakers and Papers

Mr Jimmy LEUNG Cheuk Fai, JP
Director of Planning, Planning Department, HKSAR Government

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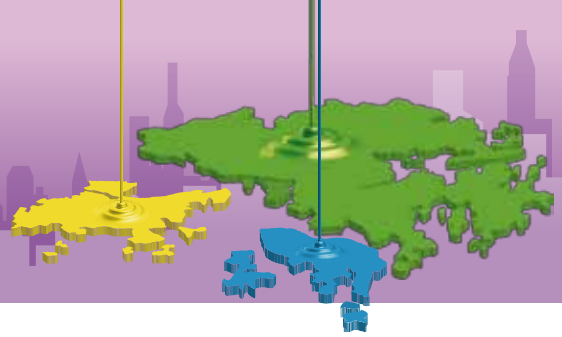
Myths and Facts about Land Utilization in Hong Kong

Hong Kong with a total land area of 1,108km^2 is home to about 7.1 million people. These people are residing on about 76km^2 of land, which is about 7% of our territory. Yet, human activities are not confined to these lands. We need space for working, studying, businesses, entertainment, recreation, community services etc. In addition to the 76km^2 of residential land, about 189km^2 of land for commercial, industrial, government, community, open space, infrastructure uses etc. made up the built-up area of Hong Kong, i.e. 265km^2 (24%). On the other hand, our country parks take up about 40% of our land area. This broad land utilization pattern has recently generated much discussion in the community. There are views that too little land has been set aside for residential use and land preserved for country parks is disproportionately high, hence resulting in a congested living environment. Some consider that the distribution of land for economic activities is not commensurate with our economic structure. While there is too little land for commercial uses (0.4%), land for industrial and agricultural uses (8.5%) is somewhat excessive, bearing in mind that Hong Kong has already been transformed into a highly service-oriented economy. Last but not least, questions have been raised as to whether we can make use of some of the undeveloped land for development.

This paper will look at how the broad land utilization map is compiled and attempt to thrash out the myths and facts about land utilization in Hong Kong.



Introduction

Land is scarce in Hong Kong, but over the years developable land has been created through cutting slopes and reclaiming land from the sea to meet development needs. A major part of our Central Business District, the airport and several new towns in the New Territories were developed primarily on reclaimed land. Our compact and high-density development has further reinforced the general belief about land scarcity. However, if we look at the land statistics in Hong Kong, the story is not as simple as that.

It may be hard to believe that our built-up area only covers 265km^2 (24%) of the total land area (1,108km^2) in Hong Kong, within which, 76km^2 is for residential while 189km^2 is for other uses to support our economy (e.g. commercial, industrial and infrastructure) and the welfare of our people (e.g. open space, government, institution and community (G/IC) facilities). The undeveloped 76% of our land is mainly woodland, shrubland, grassland, wetland, agricultural land and water bodies. At a glance, it may seem a big relief to many of us that we still have plenty of "reserve" land for development. But, in reality, can we work out how much land is available in Hong Kong through this simple arithmetic? Do we really have so much land at our disposal? This paper attempts to discuss the myths and facts about land utilization in Hong Kong.

Broad Land Utilization

Hong Kong is home to about 7.1 million people and about 7,000 regional headquarters, regional offices and local offices representing their parent companies in Hong Kong. It has world-class business infrastructure, airport and container port. Quite contrary to the hustle and bustle of our city life, the typical aerial view of Hong Kong is dominated by lush vegetation and hilly terrain. What are the basic facts? The broad land utilization in Hong Kong is shown in **Table 1** below :

Table 1 : Land Utilization in Hong Kong (2011)

Land Use Categories	Area (km^2)	%
Residential	***76***	***6.9%***
- Private	25	
- Public	16	
- Rural settlement	35	
Commercial	***4***	***0.4%***
Industrial	***26***	***2.3%***
- Industrial land	7	
- Industrial estates	3	
- Warehouse and open storages	16	
Government, Institution or Community	***50***	***4.5%***
- G/IC	25	
- Open space	25	
Transportation	***56***	***5.1%***
- Roads	40	
- Railways	3	
- Airport	13	
Other urban or built-up land	***53***	***4.8%***
- Cemeteries /crematoriums	8	
- Utilities	7	
- Vacant / Construction in progress sites	16	
- others	22	
Subtotal (Built-up Area)*	***265***	***23.9%***
Agriculture	***68***	***6.1%***
- agricultural land	51	
- fish ponds / gei wais	17	
Woodland / Shrubland / Grassland / Wetland	***738***	***66.6%***
Barren land	***7***	***0.6%***
Water bodies	***30***	***2.7%***
- Reservoirs	25	
- Streams / nullahs	5	
Subtotal (Non-Built-up Area) *	***843***	***76.1%***
TOTAL *	**1,108**	**100%**

(*) Due to rounding of figures, the subtotal / total may not add up to exactly 100%.

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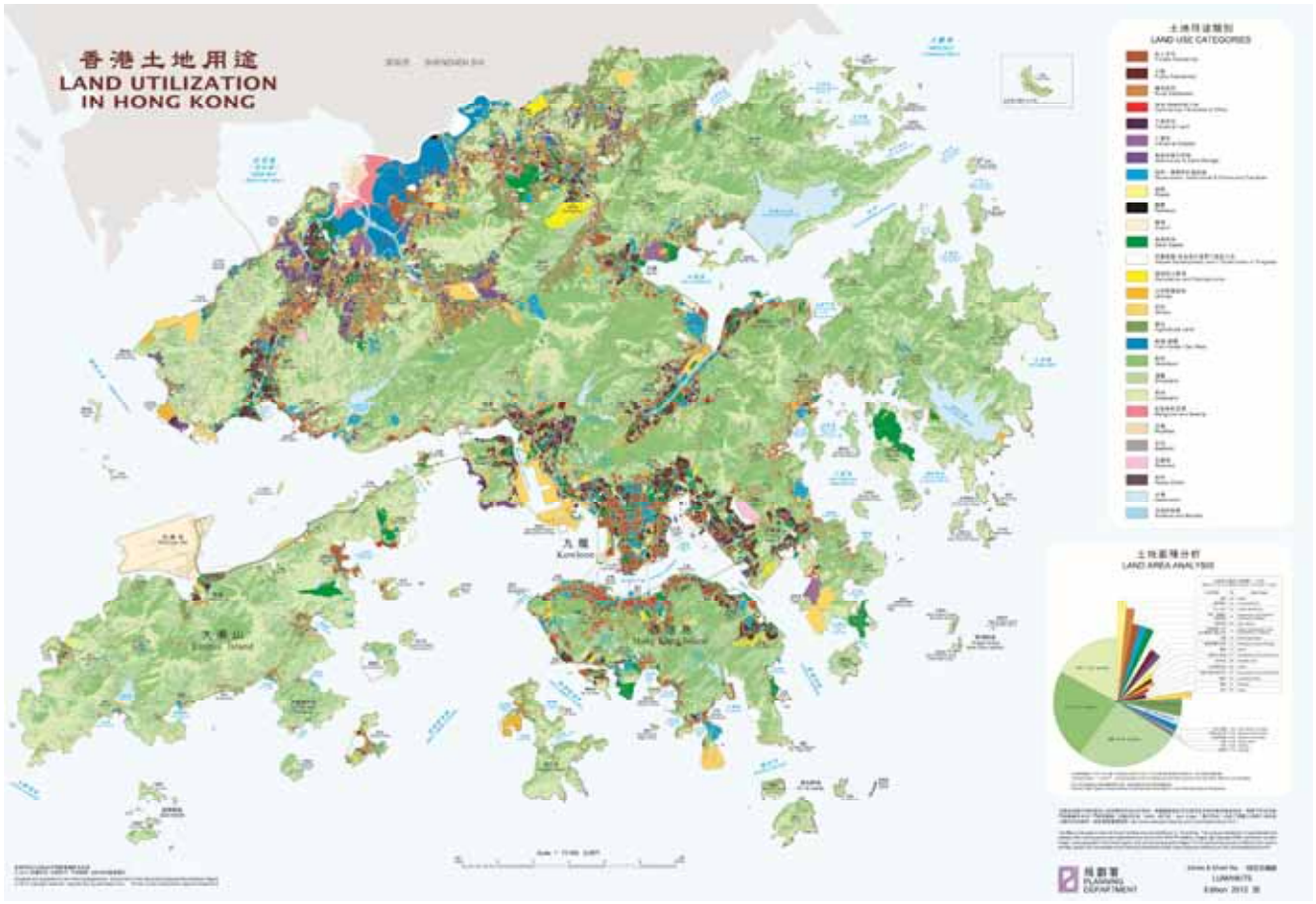
Exact Science vs Best Calculated

The "Land Utilization in Hong Kong" Map (LUM) at **Figure 1** is the visual presentation of **Table 1**. The LUM shows the broadbrush existing land use distribution in the built-up and non-built-up areas of Hong Kong at a scale of 1:75,000. The land utilization data is updated annually to provide general land usage information for the general reference of the public.

Due to resource constraints, it is not possible to update the land utilization data by direct field surveys. Hence, the updates are mainly based on data collected by various government departments and compiled by different methods. For the built-up areas, the broad land use types (e.g. private and public residential, commercial/business & office, industrial, warehouse & open storage, GIC, open space, transportation uses etc.) are identified using Geographic Information System (GIS) technology by making reference to the integrated existing land use databases compiled by the Planning Department from various government data sources (e.g. Rating & Valuation Department, Buildings Department, Lands Department, Highways Department, Housing Department etc.). It should be noted that many sites in the built-up areas are of mixed land uses. In categorizing the land uses of these sites, the concept of "predominant use" is applied. For example, for a composite private commercial-residential building, it will be recorded as "Private Residential" if the total gross floor area of residential use is larger than that of the commercial use within the same site.

Figure 1 : Land Utilization in Hong Kong



For the non-built-up areas, instead of undertaking extensive field surveys for the annual updating exercise, the broad land use types (e.g. woodland, shrubland, grassland, mangrove & swamp, fish ponds, agricultural land etc.) are identified by applying remote sensing technology as well as by cross-referencing to relevant government data sources (e.g. Agriculture, Fisheries & Conservation Department etc.) and field survey data as required (**Figure 2**).

Figure 2 : Applying remote sensing technology in identifying vegetated area

Source: SPOT® satellite image (© Copyright CNES; distributed by Spot Image).

However, it should be noted that there are limitations in the application of the LUM. The LUM is a small scale map of 1:75,000 for general reference only and the boundaries of land use categories are broadbrush. As explained above, a concept of "predominant use" is applied in preparing the LUM. Hence, for sites with mixed land uses, the non-predominant uses cannot be reflected. The LUM shows existing land usage and does not necessarily reflect the planned land uses or the current land use zonings on statutory plans. It is based on data sources from various government departments and satellite images employing the GIS and remote sensing technology. They are therefore our "best-calculated" broad land use pattern for the whole territory at a juncture of time within the resources and methodological constraints.

[1] Up to early 2011.

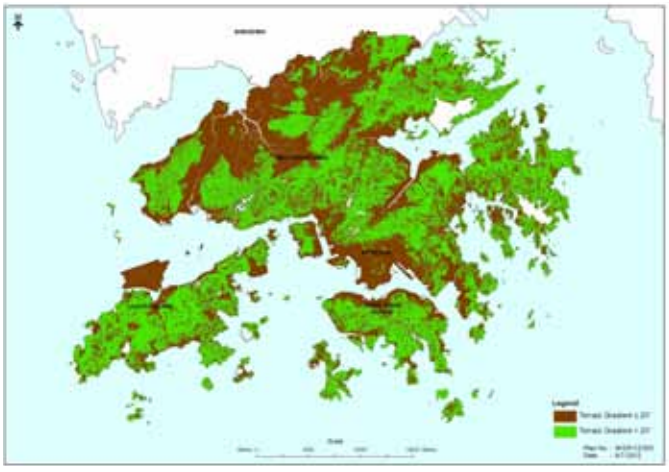
Horizontal Land Intake vs Vertical Development

Following the above, it is plain that the land utilization figures refer to the land intake on a horizontal plane. The LUM is a 2-dimensional expression of land development in Hong Kong. It does not reflect the sheer intensity of vertical development which is typical of Hong Kong. Domestic and non-domestic developments in Hong Kong can be built up to a plot ratio of 10 and 15 respectively. Growing upwards and to a lesser extent growing downwards have greatly intensified land utilization in Hong Kong. In interpreting the LUM, one should not forget the "vertical" dimension of land utilization.

Built-up area too small (265 km² or 24%)?

The jigsaw of the current land utilization pattern evolves from the interplay of a number of factors, including natural topography as well as changing social, economic, political and environmental needs through the development history of Hong Kong. Urban morphology is very much dictated by natural topography. Hong Kong is no exception. Discounting 6,824 ha[1] of flat land (6% of the total land area) obtained from reclamation, about 53% of our land has a gradient over 20 degrees and is generally considered neither suitable nor cost effective for development (**Figure 3**). Over 90% of the built-up area rests on land of not greater than 20 degrees. The remaining built-up areas on uplands are cemeteries and the Kadoorie Farm and Botanic Garden which is classified as a GIC use.

Figure 3 : Developable land in Hong Kong



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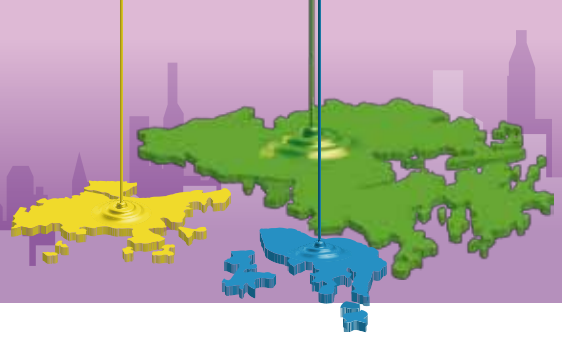
Topographical constraint aside, compact, high-density and mixed-use development mode has been adopted not without good causes. First, it is to achieve economy of scale in the provision of the necessary transport infrastructure and utilities. Second, it is conducive to promoting agglomeration economies which is crucial to the success of many social and commercial enterprises. The above development model also means we can minimize our urban footprint for achieving the same intensity of development, thereby containing urban sprawl.

Being a highly compact city, Hong Kong's spatial development pattern is underpinned by the planning concept of clustering the bulk of development around mass transit railway stations to facilitate fast and mass movement of people in an environmentally friendly mode of transport. About 42% of our living quarters and 75% of our commercial/office GFA fall within 500m radius of railway stations (**Figure 4**). This encourages the use of mass transit. About 90% of all passenger trips made are by public transport. Besides, our compact, mixed-use development mode has made Hong Kong a "walkable" city. Hong Kong has a remarkably low number of motor vehicles per 1,000 population compared with other countries (83 for Hong Kong compared to 168 for the Mainland of China, 380 for Japan, 248 for Singapore, 574 for the United Kingdom, 815 for the United States of America)[2]. The high reliance on public transport and walking help reduce carbon emission and mitigate climate change.

Many cities are re-engineering their urban fabric for a more compact form in the hope of reducing energy consumption. On the other hand, we have a dense urban core with fine-grained urban fabric and small walkable blocks which not only consumes less energy but also facilitates interconnecting, socializing and networking. The diversity, vibrancy and versatility of the dense urban core are integral to the success of Hong Kong. Admittedly, there are also problems with a compact and dense development pattern such as "walled" buildings, urban heat island effect, hot and humid micro climates, and air, noise and light pollution. The Administration has been taking actions to tackle these issues.

Figure 4 : Areas within 500m of railway stations

[2] Figures for USA and UK refer to the situation in 2008 and the rest refers to 2009. Source of information: HK's figure from the website of the Transport Department. The figure refers to the number of licensed motor vehicles including private cars, motor cycles, motor tricycles, taxis, buses, light buses, good vehicles and government vehicles. The mainland of China's figure from China Statistical Yearbook 2010, National Bureau of Statistics of China. The figure refers to passenger vehicles, trucks, other motor-cycles, transportation department vehicles and vehicles owned by individuals. Japan's figures from Japan Statistical Yearbook 2011, Statistics Bureau, Japan. Singapore's figure from Yearbook of Statistics Singapore 2010 & 2021, Department of Statistics, Singapore. USA's figure from Statistical Abstract of the Unites States 2011, US Census Bureau, USA. The figure refers to the number of registered automobiles, which include publicly, privately and commercially owned vehicles, motor cycles, station wagons, passenger vans and taxis but excludes small pick-up trucks and military services vehicles. UK's figure from Annual Abstracts of Statistics 2010, Office for National Statistics, UK.



Too little residential land (76 km² or 7%)?

As shown in **Table 2** below, about 7% of the land in Hong Kong is for residential use. However, if the non-developable land (i.e. land with over 20 degrees gradient) is discounted, the developable land area is only about 540 km² and the proportion of land for residential use rises to 13.9%, which is comparable with that in Shenzhen and Singapore.

Table 2 : Comparison of Residential Land with Major Cities

	Hong Kong	Shenzhen	Singapore	New York	London
Total land area (km²)	1,108(1)	1,992(3)	714(5)	784(7)	1,596(9)
Residential land (km²)	76(1)	190(3)	100(6)	264(7)	520(9)
Population (million)	7.07(2) (2011)	10.36(4) (2010)	5.18(5) (2011)	8.18(8) (2010)	7.75(10) (2009)
Population Density (persons/km²)	6,544	5,201	7,257 #	10,430	4,932
% of Housing Land to Total Land Area	6.9	9.6	15.2	33.8	32.5
% of Housing Land to Developable Land Area	13.9	12.2	* 15.2	* 33.8	* 32.5

Source :

(1) Land Utilization in Hong Kong, Planning Department (http://www.pland.gov.hk/pland_en/info_serv/statistic/landu.html)

(2) 2011 Population Census, Census & Statistics Department (http://www.census2011.gov.hk/en/main-table/A101.html)

(3) Shenzhen City Land Change Survey Statistics 2010 (http://www.szpl.gov.cn/xxgk/tjsj/ch/201007/t20100712_56454.html)

(4) 深圳市2010年第六次全国人口普查 (http://www.sztj.com/main/xxgk/tjsj/tjgb/pcgb/201105127231.shtml)

(5) Singapore in Figures 2012, Department of Statistics Singapore (http://www.singstat.gov.sg/pubn/catalogue.html)

(6) Table 1.1 - Singapore Concept Plan 2001 (http://www.ura.gov.sg/interim/report1.pdf)

(7) City of New York 2010 (Department of City Planning) (http://www.nyc.gov/html/dcp/html/landusefacts/landusefacts home.shtml)

(8) 2010 Demographic Tables (http://www.nyc.gov/html/dcp/html/census/demo_tables_2010.shtml)

(9) Land Use GLUD 2005 CSV, 2009 London borough stat-pack, 1 Dec 2009 (http://www.london.gov.uk/who-runs-london/mayor/publications/society/facts-and-figures/borough-stat-pack-2009/boros2009)

(10) Population Density, 2009 (http://data.london.gov.uk/datastore/package/population-density-2009-borough)

Notes :

(*) Assuming that hilly terrain in Singapore, New York and London accounts for a very small portion of land area.

(#) Land area of 714.3km² (as at 2011) is used to calculate the population density

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According to the 2011 Population Census, the average population density in Hong Kong is about 6,544 persons/km^2. The average population density is not particularly high among other cities under comparison.

In recent years, there are increasing public aspirations for a better living environment and there are views that too little land has been set aside for residential use. At times of high development pressure due to rapid population growth, we have built with a high development intensity to meet the population needs. Some large residential sites in Tseung Kwan O are built up to a plot ratio of about 8 resulting in developments that the community clearly does not favour. In answering the quest for a better living environment, the Administration has taken steps to introduce appropriate development restrictions on statutory town plans as well as reducing the development intensity of new sites. With population increase, requests for more spacious living environment and more restrictive development intensity, it is certain that Hong Kong will need more land for residential development to accommodate future population growth. The areas being investigated are of an unprecedented scale. About 2500 hectares of land are being studied or reviewed by the Government for development purpose. Major ones include the North-east New Territories (NENT) New Development Area (NDA), Hung Shui Kiu NDA, Tung Chung Remaining Development, Yuen Long South, Kwu Tung South, Kam Tin South, ex-quarries etc. Apart from these, residential needs are catered through rail-based development projects, urban renewal projects, public rental estates, and private housing development projects through land sale programme, as well as redevelopment through rezoning of sites. Last but not least, the Administration is carrying out a study on enhancing land supply strategy in which reclamation outside Victoria Harbour and rock cavern development are explored to complement the existing land supply options.

Disproportionate land for commercial, industrial land and agricultural uses?

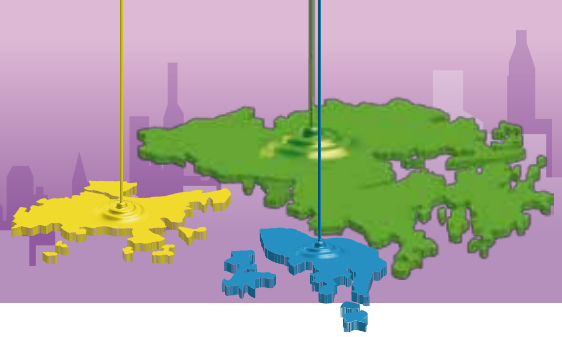
There are 4km^2 (0.4%) of land for commercial use, 26km^2 (2.3%) for industrial use and 68km^2 (6.1%) for agricultural use in Hong Kong. Considering that Hong Kong has already been transformed into a highly service-oriented economy, there are views that land intake for commercial, industrial and agricultural uses is not commensurate with our economic structure.

Too little commercial land (4 km^2 or 0.4%)?

Skyscrapers characterize the landscape of the commercial areas. Among different kinds of land uses, our commercial land is a good example of compact development. Commercial developments tend to enjoy the benefit of the highest permissible plot ratio up to 15. Although the land area is relatively small, it accommodates a relatively large quantum of floorspace. Our Central Business District (CBD), though taking up only about 7.5km^2 or 3% of the built-up area, accommodates 8.55M m^2 (59%) of the private office GFA in Hong Kong[3].

As explained previously, the LUM is based on a "predominant use" concept. Given the mixed-use development mode in Hong Kong, it is not unusual for commercial floorspace to exist in mixed developments and hence is subsumed under other broad land use categories, e.g. the commercial podium on the lower floors of mixed commercial/residential developments in "Residential (Group A)" or "Comprehensive Development Area" ("CDA") zones, or local convenient stores on the ground floor of residential buildings in public rental housing estates are subsumed as "Residential" under the LUM. Offices and showrooms permissible within transforming industrial buildings are still subsumed as "Industrial" under the LUM. Likewise, retail shops within the Hong Kong International Airport Terminals are simply classified as "Airport" under "Transportation". Put simply, commercial floorspace actually spreads out of the "Commercial" category under the LUM.

[3] For the purpose of the HK2030 Study, the CBD is defined as the business zones within Central, Wan Chai, Sheung Wan, Causeway Bay, Tsim Sha Tsui and the West Kowloon Reclamation. The land area of CBD includes land for commercial use as well as roads and other land use types within the CBD. Office GFA within CBD is compiled by Planning Department based on Property Review 2012 of the Rating and Valuation Department.



We are mindful of increasing the commercial land to sustain Hong Kong as a regional business hub and one of the top tourist destinations, and provide affordable premises for different businesses. A successful commercial node requires a number of attributes, including good accessibility, sufficient land for building up a critical mass of commercial premises and hence activities, as well as adequate supporting facilities. With this in mind, new office/commercial nodes are planned in West Kowloon and Kai Tak Development. With the incremental materialization of the Energizing Kowloon East's initiative which seeks to transform Kowloon East into CBD2, more land areas will be reclassified from "Industrial" to "Commercial" under the LUM. Land will also be reserved in Kwu Tung North, Fanling North and Ping Che/Ta Kwu Ling NDAs in the NENT for commercial development to meet the local as well as strategic needs.

Too much industrial land (26 km^2 or 2.3%)?

The 26km^2 industrial land in Hong Kong is made up of Industrial Estates (3km^2), land occupied by industrial buildings, rural industries, special industries such as ship repairing yard, oil depot, power station, cement plant (7km^2) and land for warehouse/storage use including open storage (16km^2). Most of these premises are under active use, as reflected by the low vacancy rate of 6% for private flatted factories and 3.8% for private storage as at end 2011[4]. Industrial estates are almost fully occupied and provide a campus-like environment for industrial or high-tech undertakings not suitable in conventional flatted factories. They contribute positively to the economy and support the pillar industries and the Six Industries[5]. For instance, many data centres, back offices and storage related to the port operation and logistics industry are located on industrial land.

Given the intrinsic operational characteristics of most of the industrial activities, they have to grow outwards and hence taking up considerable amount of land. For example, industrial estates, oil depots, power stations, cement plants, storage of construction materials and sawmills take up extensive land with limited vertical development. While their contribution to GDP may not be as high as the advanced producer services such as finance and banking, they are however indispensable to every city. Intensification of land uses is much higher on commercial land which is adaptive to the mode of operation of most commercial activities. Observations based on simply comparing the land intake of commercial and industrial uses could therefore be incomplete, to say the least.

Notwithstanding that the land intake of commercial use is much smaller than that of industrial use, an analysis in terms of floorspace will show a different picture. **Table 3** compares the existing stock of private commercial and industrial floorspace in Hong Kong, and a substantially narrow gap is observed. A survey of industrial buildings undertaken by the Planning Department in 2008 and 2009 showed that about 27% of the floorspace was being used as office or ancillary office. Considering the conversion of some industrial floorspace for commercial use, there is in fact more commercial floorspace than industrial floorspace in Hong Kong.

Table 3: Private Commercial and Industrial Stock in GFA (m^2) as at end 2011[6]

				Total GFA, m^2
Commercial:	Private Offices	Private Commercial		
	14,422,000	14,435,000		28,857,000
Industrial:	Private Flatted Factories	Private Storage	Private Specialized Factories	
	22,984,000	4,645,000	3,898,000	31,527,000

[4] Property Review 2012, Rating & Valuation Department.
[5] The Six Industries are : Cultural and Creative Industries, Medical Services, Education Services, Innovation and Technology, Testing and Certification Services, and Environmental Industries.
[6] Property Review 2012, Rating & Valuation Department. Conversion factor applied to convert the IFA in Property Review to GFA.

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The LUM does not necessarily reflect the planned land uses which take time to realize, particulalry those relying on private initatives and market forces. Regarding the 7km^2 of land occupied by industrial buildings, 4km^2 is already zoned "Other Specified Uses (Business)" ("OU(B)"), "CDA", "Commercial" and "Residential (Group E)" in response to the changing circumstances including economic restructuring and the latest development needs. Since 2000, the Planning Department has carried out 3 rounds of assessment of industrial land in Hong Kong and over 250ha of land has been rezoned from "Industrial" to other non-industrial use zoning, including "OU(B)". In the latest round of assessment completed in 2010 covering 1,300 private industrial buildings, it is recommended that 60ha of land should be rezoned for non-industrial development, 30ha of which is for residential development.

Optimizing the use of derelict and under-utilised land in the New Territories has long been our planning strategy to meet the development needs and upgrade the rural environment. Better use of the "brownfield sites" such as open storage and port back-up sites in the New Territories is a major directive promulgated in the HK2030 : Planning Vision and Strategy. About 250ha of land being used for open storage and port back-up purposes is included in the proposed Hung Shui Kiu and NENT NDAs. The Policy Address 2011-12 further commits to exploring the possibility of converting into housing land some 150ha of land in the North District and Yuen Long currently mainly used for industrial purposes or temporary storage, or which is deserted. With the rezoning completed and the on-going initiatives to optimize under-utilized industrial land, we anticipate a further reduction of the industrial land as time goes by.

Too much agricultural land (68 km^2 or 6.1%)?

Out of the 68km^2 of agricultural land, a large proportion (42km^2) is of ecological/conservation value and falls within areas such as fish ponds/gei wais, water gathering grounds, country parks, archeological sites as well as "Village Type Development" ("V") zone. These areas are generally not suitable for large-scale development and should be retained. Some 17km^2 out of 42km^2 of agricultural land comprise fish ponds/gei wais. Most of the inland ponds are located in the Deep Bay Area and have been listed as a "Wetland of International Importance" ("the Ramsar Site") under the Convention on Wetlands of International Importance especially as Waterfowl Habitat since 1995. Such designation recognizes the ecological importance of the Deep Bay Area. If a party subsequently deletes or restricts a "Wetland of International Importance", it should as far as possible compensate for the loss of wetland resources and recreate additional nature reserves for the purpose. In gist, there is a general presumption against development of fish ponds/gei wais.

Of the remaining agricultural land, some portions either have been retained for development or included in areas under studies / review. Similar to industrial land, there will be a decrease in agricultural land in the years to come.

Although the contribution of agriculture to our GDP is negligible, agricultural land in the rural areas possesses intangible values. About 18km^2 of the agricultural land including fish ponds are actively farmed[7]. Local production and consumption of farm produce can help reduce carbon footprint by minimizing transportation. Besides, they are interspersed with other rural land uses to form the rural landscape and character, providing visual relief and alternative lifestyle to the urban dwellers. Retaining agricultural land also contributes to mitigating climate change.

Too much land for Country Parks (442 km^2 or 40%)?

Country Parks and Special Areas (44,239ha) (generalized as country parks hereafter) account for about 40% of the land area in Hong Kong[8]. These areas are designated and protected from development under the Country Parks Ordinance after a due process. As compared with only 7% of land for residential use, there are views that land for country parks is excessive given the high population density in our urban area. Country parks are important natural and public assets of Hong Kong. They serve multiple functions

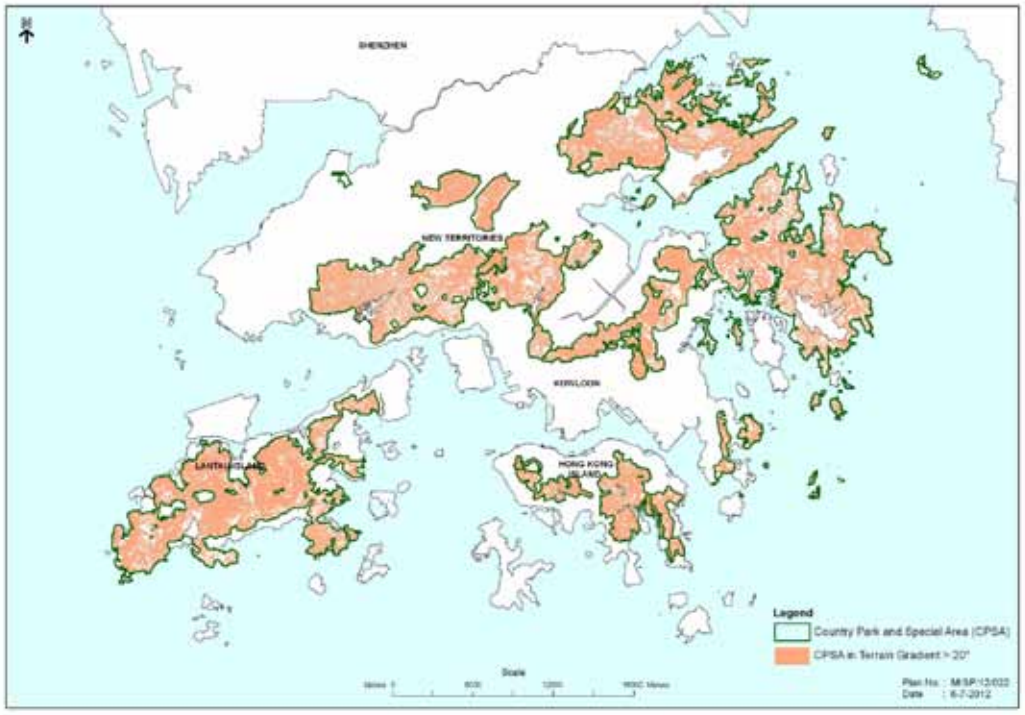
[7] Agriculture, Fisheries and Conservation Department Report 2010-11, Agriculture, Fisheries and Conservation Department
[8] A total of 24 country parks have been designated for the purposes of nature conservation, countryside recreation and outdoor education. There are 22 special areas created mainly for the purpose of nature conservation.

in addition to passive recreation purpose. They can facilitate carbon sequestration, regulate microclimate and collect rainwater. They are the "lungs" of this cosmopolitan city and important wildlife habitat for conserving biological diversity.

It is worth noting that the Convention on Biological Diversity adopted in the 1992 Rio Earth Summit on Sustainable Development was extended to Hong Kong on 9.5.2011[9]. Accordingly, Hong Kong has the obligation to conserve biological diversity and promote sustainable use of the components of biological diversity. Hong Kong's topography and sub-tropical climate provide a wide range of habitats to support a rich variety of flora and fauna. In Hong Kong, there are more than 3,100 species of vascular plants, of which about 2,100 are native; some 50 species of mammals; over 500 species of birds; about 80 species of reptiles and more than 20 amphibian species. Insect diversity is also very high with more than 230 species of butterflies and around 115 species of dragonflies[10]. Disturbing the country parks will have negative impacts on the habitats of these species.

In fact, over half of the country parks are designated as water gathering ground which has to be protected. Coupled with the "Sites of Special Scientific Interest" (SSSI)[11] and areas with gradient over 20 degrees, these constrained areas constitute over 90% of the country parks (**Figures 5 and 6**). More fundamentally, country parks are a very important component of the ecosystem and a popular recreational outlet for residents. Large-scale development in country parks will necessitate extensive site formation and large-scale infrastructure projects, which would seriously jeopardize the natural environment and ecology. Country parks are therefore not idle land but are worthy of preservation.

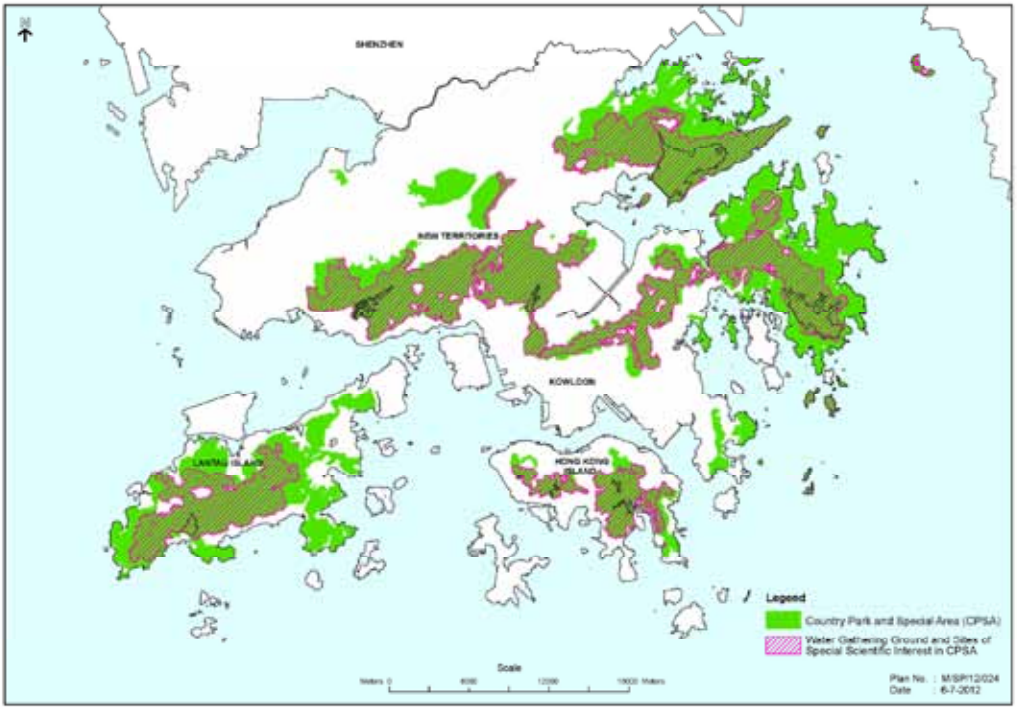
Figure 5 : Hilly Terrain of Country Parks



[9] Website of the Environmental Protection Department.
[10] Website of the Agriculture, Fisheries and Conservation Department.
[11] "SSSIs" may be land based or marine sites, which are of special interest because of their flora, fauna, geographical or geological features.

Speakers and Papers

Figure 6 : Water Gathering Ground and SSSI within Country Parks

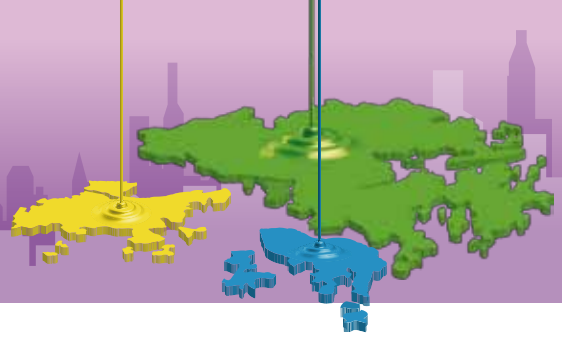


Conclusion

As shown from the above, we need to look beyond the land area figures in horizontal dimension for a better understanding of the land utilization situation in Hong Kong. For example, the broad land use categorization expressed in percentage of total land area in Hong Kong may lead to a perception that we have developed too little (only 24%) of our land resources to meet the development needs. But we should not overlook the fact that the majority of the undeveloped area is subject to topographical constraints, making it neither suitable nor cost effective for development. While the apparently extensive coverage of country parks may give rise to queries as to why some country parks are not redesignated for development, the fact is that 90% of the country parks are constrained by the topography, the presence of water gathering ground, site of special scientific interest (SSSI) etc. The country parks also serve multiple functions as "lungs" of our city and habitats for wildlife.

From the figures of the residential land area (76 km^2 or 6.9% of the total land area), one may have the impression that Hong Kong lags behind other major cities. However, after discounting the non-developable land, we have developed about 13.9% of our land for residential use, which is comparable with that in Shenzhen and Singapore. The proportion of land developed for industrial use (2.3%) and commercial use (0.4%) seems not consistent with our economic structure. However, taking into account the generally higher plot ratio for commercial developments and the use of premises in industrial buildings for office purpose, we have more commercial GFA than industrial GFA, which truly reflects Hong Kong's transformation from a manufacturing to a service economy.

Hong Kong is a global city and a showcase for compact and high-density development. High efficiency and agglomeration economies brought about by such forms of development underpin the success of Hong Kong. Unlike many other cities going through rapid urbanization, Hong Kong is unique for being able to preserve a substantial portion of its natural endowment through containing urban sprawl. Thanks to the extensive coverage of country parks, access to country parks is convenient to many local residents. Yet, development pressures are mounting on Hong Kong and the living quality of the dense urban core does not match up to our level of economic achievement. Making available more land for housing and other uses,



enhancing cityscape with better design and improving the environmental quality are surely matters of priority.

Our highly compact city morphology, shaped by the hilly topography, has achieved economy of scale in development and containing the urban footprint. Hong Kong will continue to adopt a high-density development approach around mass transit railway stations and to better utilize the existing built-up areas where infrastructure capacities permit. To use land wisely, opportunities for recycling brownfield sites and adaptive reuse of existing buildings will be vigorously explored. Amid the continued quest for land resources, the Administration will continue to make strenuous efforts to increase land supply through a mix of land supply options. Suitable sites at the non-built-up areas such as de-vegetated land, fallow agricultural land and ex-quarry sites have been and will continue to be identified for development. Major development projects under studies or review such as the NENT NDAs, Hung Shui Kiu NDA, Remaining Development in Tung Chung and Yuen Long South involve varied extents of non-built-up areas. But new development sites are not without problems as the development process involves rezoning, statutory environmental impact assessments, land resumption, clearance and compensation. The processes involved are long and complex and are often subject to public objections and even legal challenges. We are also investigating greater use of rock cavern development and reclamation outside Victoria Harbour. By relocating "bad-neighbour" uses to caverns, the original land as well as the adjacent sterilized land can be released for housing or other uses. Reclamation at suitable location outside Victoria Harbour on an appropriate scale is surely an option to increase land supply and create a land reserve to meet the fast changing socio-economic needs.

In tandem with increasing land supply to meet population growth, rising aspiration for quality living environment and economic development, we have been taking planning measures to make our existing built environment more livable. With a high-density cityscape, together with a hot and humid sub-tropical climate, Hong Kong fundamentally needs more air movements for thermal relief and comfort and better hygienic conditions within the built environment. To target for long-term improvements of the living environment, the Planning Department completed the "Feasibility Study for Establishment of Air Ventilation Assessment System (AVA)" in 2005. A set of qualitative guidelines and a framework for carrying out AVA have subsequently been formulated. We have completed another study, "Urban Climatic Map and Standards for Wind Environment – Feasibility Study", with the objective of providing a more scientific and objective basis for identifying climatically sensitive areas and assessing the impacts of major developments and planning proposals on the local wind environment. Coupled with these AVA guidelines, the Buildings Department promulgated practice notes in 2011 to enhance the environmental sustainability of our living space by setting out requirements on building separation, building setback and site coverage of greenery.

For a compact city like Hong Kong, urban design plays a pivotal role in making our built environment vibrant, healthy, walkable, attractive and simply enjoyable. It can also contribute positively to regenerate a dilapidated old urban area. We will continue to incorporate good urban design practice at various levels of planning.

Sustainability should not be just a buzzword. Its application entails a delicate balancing act which calls for a high level of professionalism from experts of related fields. Learning from our own experience and that of other places will certainly help us to shape a better and more sustainable future. There is a broad consensus that compact development pattern is a more sustainable urban form. This has been our mode of development, and yet the outcome is not entirely satisfactory and there is certainly room for improvement. Let us get it right, not only for ourselves but also the future generations.

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Current Responsibilities
Sr Lau is a Chartered General Practice Surveyor with over 25 years' property experience in Hong Kong, the PRC and the Asian region. He is the Head of the Valuation Advisory Services Department of Jones Lang LaSalle Hong Kong and is an International Director of the firm with responsibility for the Asia valuation and advisory business.

Experience
Sr Lau has a wide breath of experience in valuation, real estate consultancy and investment sales market.

His main valuation, consultancy and sales experience include:

- Portfolio valuations
- Valuation due diligence services
- Litigation valuation advice and expert witness in High Court/Lands Tribunal/Arbitration
- Government lease modification application and premium negotiations
- Development Consultancy
- REIT property advice
- Investment and development sites sales

Education and Affiliations
Sr Lau graduated from the Hong Kong Polytechnic University in 1986 with a Professional Diploma in Estate Management. He has also received a Master of Arts Degree from the Chinese University of Hong Kong in 2008. His other professional qualifications and involvement include:

- Member of the Hong Kong Institute of Surveyors ("HKIS") elected in 1992
- Professional Member of the Royal Institution of Chartered Surveyors ("RICS") elected in 1991
- Member of the GPD Council of the HKIS from 1994 to 2007 and from 2009 to 2013
- Member of the Estate Agents Authority of Hong Kong 2010 to 2012
- Member of the RICS Asia Valuation Board

Land Supply Strategy – Missing Pieces in the Jigsaw

This paper attempts to analyse and provide observations on the land supply in Hong Kong in the medium and long term.

The potential residential land supply of Hong Kong announced by the government up to 2020 has been studied. Based upon the currently available details and the assumption that there will be no major policy change, the announced target of 20,000 private residential units land supply per year would be unlikely achievable in this period.

Would the long term supply be more optimistic? The government has started the consultation of reclamation and has also proposed resumption in the New Territories area to facilitate development. This paper will examine the government assumption of development density which drives the assessment of development lands required to meet the needs of Hong Kong. Examples of development density of selected new towns and islands and also new development areas have been studied. In the light of these analyses, the development density assumption seems to be overly optimistic. The importance of MTR connection for these new areas has not been made clear.

Factors restricting the land supply through Lease Modification / Land Exchange not told by the government have also been examined. The better use of the privately owned lands is a key "piece" of land supply which currently is missing out from the Land Supply "Jigsaw".

Speakers and Papers

The 2010/11 Policy Address: The Beginning of the Change

The 2010/11 Policy Address marked the beginning of the change to address the shortage of lands for development in Hong Kong. The shortage involves different sectors including but not limited to residential, office and shopping areas. The then Chief Executive, Mr Donald Tsang announced the target for private residential units land supply would be 20,000 units per year for the coming 10 years.

The government since then has introduced various measures in government land sales to boost up the number of residential units land supply. These include the required number of units or the restrictions of sizes in land grants beginning from March 2011. Then, there is a shift from auction to tender sales of government lands.

The public consultation of "Enhancing Land Supply Strategy – Reclamation outside Victoria Harbour and Rock Cavern Development" ("Reclamation Consultation") is another major step which started in November 2011. The government had suggested that both the redevelopment and rezoning land supply options were not suitable for land reserve purposes. Both options would need the involvement of private owners and developers. The first stage of consultation was completed by March 2012.

Then there have been various development studies including but not limited to The North East New Territories New Development Areas ("NENT Development Areas")Planning and Engineering Study. This study is controversial as the government would like to re-use the 'Conventional New Town Approach". This would confirm the exclusion of private land owners in such large scale development areas and this could have far-reaching impact onto the development lands market.

Whist the government has taken up the land supply responsibility seriously, her various actions suggest that she is not keen in seeking the co-operation and/or participation of the private sector land owners.

Hong Kong Residential Land Supply: 2011 to 2020

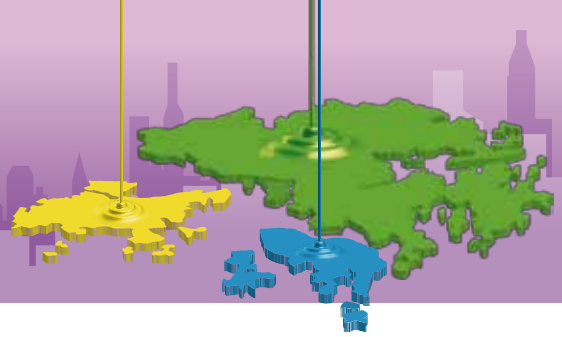
A news report of Mrs Carrie Lam, the then Secretary for Development, on 14 June 2012 revealed the latest official estimate of private residential land supply for the period of 2011 to 2020. The projected supply units would be marginally less than 60,000 in the first 5 years (2011 to 2015), whilst in the second 5 years (2016 to 2020), the number would be around 105,000. Such figures have not included the potential units which might come about from re-zoning of industrial lands and green-belt, etc which impact in the short term would not be significant.

The following table **(Table 1)** summarizes the sources of land supply and the relevant number of units in the two 5-year periods:

Table 1: Forecast of land supply of private residential units in 2011 to 2020

	2011 to 2015	2016 to 2020	Total	% of total
Application List	21,500	53,000	74,500	46%
West Rail Line & MTR	8,230	21,700	29,930	18%
URA	5,000	5,000	10,000	6%
Private Redevelopment	10,000	10,000	20,000	12%
Lease Modification / Land Exchange	15,000	15,000	30,000	18%
Total	59,730	104,700	164,430	100%

Source: Hong Kong Economic Times report on 14 June 2012



These figures should be realistic if not optimistic assessment by the government as at the date of publication. If there are further major changes to the planning and land use policies in Hong Kong, then these figures could be re-visited accordingly.

The above supply figures represent new residential units, but have not deducted the existing residential units that would need to be demolished for development. This consideration is material for those URA and private redevelopment projects which will account for some 6% and 12% of the projected new supply respectively.

I have relied upon these figures for the analysis in this paper.

2011 to 2015

The supply figures in this period should be fairly accurate given its short term nature and that the government is in good control of various sources of supply including the application list, railway projects and the URA projects. Less certain would be the private redevelopment and land exchange cases (including lease modification).

The first 5 years supply figures have pointed to a significant shortfall of the 20,000 units per year target. Only about 60% of the target could be provided.

2016 to 2020

The supply figures of some 105,000 units suggested that the target of 20,000 units per annum should be achievable. A close look of the supply would reveal the real challenges.

Some 30,000 units or 30% of the projected supply would hinge upon the timely delivery of developable lands in the NENT Development Areas. Readers may by now appreciate the importance of this source of development lands. The government seems to have felt the need to initiate the resumption so as to control the timing for delivery of the developable lands. The government apparently cannot have the luxury to wait for the private sector to initiate the relevant land exchanges. By doing so, the perception by the public of the government co-operating with the land owners and/or the riches can also be taken away. The use of resumption powers would, however, also mean a very costly exercise for Hong Kong.

Land Supply: Contribution by the Public Sector and the Private Sector

For the 10 years forecast period, the public sector land supply (including land application list, railways projects and URA projects) would account for some 70% of the total supply, with the remaining to be undertaken by the private sector.

The land supply from the land application list and railways projects has a common characteristic: back end loaded. Only about 28% of the total units in this category would be available in the first 5 years and the bulk would come in the second 5 years.

The projected supply from the URA, private redevelopment and lease modification/land exchange would be fairly consistent in the two 5-year periods.

The Public Sector Land Supply

The supply of some 51,700 units in the second 5 years would hinge upon the timely delivery of lands in:

- North East New Territories: 30,000 units;
- Railway projects in Pat Heung Maintenance Centre and Siu Ho Wan Depot: 21,700 units.

These units are all in the northern part of the New Territories and Tung Chung area where the availability of employment opportunities, amongst other things touching upon the livelihood of the residents, would require further effort from the government.

The Private Sector Land Supply

The land supply from private redevelopment and land exchange routes will account for about 18% of the estimated total supply in the government forecast for the 10 years period. How realistic are these figures is difficult to gauge.

Speakers and Papers

Land Exchange

Land exchange (including lease modification) supply would hinge upon many factors including but not limited to:

- Relevant private lands have been acquired/controlled by private developers
- Relevant town planning applications applied and/or approved;
- Relevant land exchange applications applied and/or approved in principle;
- Property market cycle and land premium negotiation between government and the private owners.

Table 2 below showed that the land exchange revenue varied significantly over the last 5 financial years from HK$3.5 billion to HK$20.1 billion or 10% to 56% in terms of percentage to the total land revenue. On average, the sum would be HK$11.2 billion per annum or 22% of the land revenue.

Table 2: Land revenue from land exchange and the total land revenue

	Financial Year					5 years
	07/08	08/09	09/10	10/11	11/12	average
Land Exchange revenue (Billion)	10.2	3.5	20.1	6.7	15.6	11.2
Total Land revenue	53.9	13.7	35.8	65.2	88.1	51.4
Land Exchange revenue as a % of the total land revenue	19%	25%	56%	10%	18%	22%

Source: Lands Department

The above analysis revealed that land exchange is no longer a major supply of residential units. There were only a total of 12 exchange cases with a premium amount of over HK$ 1 billion in this 5 years period. How sustainable are these big land exchange cases is a question.

Resumption under the "Conventional New Town Approach"

The government announced in June 2012 that it will re-use the "Conventional New Town Approach" for implementing the NENT Development Areas. The private lands in the area will be resumed and cleared. Site formation works will then be carried out and infrastructure to be provided. Afterwards, land for various purposes like those planned for private development will be supplied to the market.

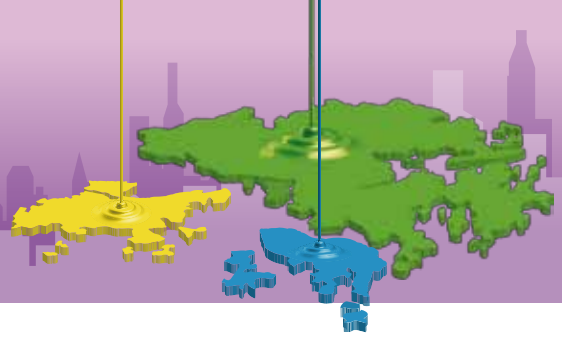
How developers/private land owners would react to such threat of resumption in the subject area and the wider New Territories? Would developers be deterred to assemble lands in the New Territories and future land supply through land exchange would become insignificant? Would developers just sit and wait for the resumption without taking further actions to protect their property rights? These questions are yet to be answered.

Private Redevelopments

There have been many private redevelopments in the urban areas in recent years. The contributing factors include:

- The appreciation of property values;
- The incentives available under the sustainable development policy; and
- The lowering of threshold of ownership to apply under the law of Compulsory Sale for Redevelopment.

How sustainable would this route of supply be then? With the government actively pushing lands to the market, this would bring down the hope for property value appreciation. The change in the rules of the sustainability development has such impacts including: reduction of floor area incentives, increase in costs for environmental requirements and



underground car parking. The reductions in building height limits through town planning zoning also restrict redevelopment values.

Hong Kong Residential Supply : 2021 and Beyond

When the government announced the Reclamation Consultation, the proposed relocation of the Shatin Water Treatment Plant and similar facilities did light up some hope of significant land supply then. Such hopes quickly died down after it had been revealed that the earliest available time of the land of Shatin Plant would be by 2027, i.e. some 15 years later.

The public acceptability of large scale reclamations, the choice of actual locations and connectivity of these sites to the main urban areas are major issues yet to be resolved. The building up of land reserve would still be a long way ahead.

The Assessment for Demand of Extra Land

The forecast of demand of extra land supply has been linked to the population estimates. The population forecast of Hong Kong in the Reclamation Consultation in 2039 would be up to 8.9 million. [1]Such population forecast (including the underlying assumptions) had attracted suspicions and criticisms from various groups and commentators at the time of consultation.

This paper would look instead at the assumption made by the government of the population density of development lands and what would this mean by comparison to existing development areas.

The existing population of some 7 million has been served by some 17,500 ha of land. The density is approximate 400 persons per hectare of land ("Government Assumed Development Density"). The projected population increase of 1.8 million by year 2039 would require some 4,500 ha of lands. The government considered that existing major land supply resources can provide a total of 3,040 ha of land. A shortage of approximately 1,500 ha of land has then been drawn.[2] This is also the rationale for reclamation from the sea.

Such land requirement assessment had not addressed two major aspects:

- The demand for more space from existing population and business needs as a result of improved economic conditions.
- How the new development areas would be able to achieve the Government Assumed Development Density?

The Reclamation Proposal

Reclamation is subject to various statutory and non-statutory constraints and the competing uses of the harbour and the sea. Two maps in the Reclamation Consultation provide vivid pictures of the constraints onto reclamation. [3]

A total of 25 reclamations sites have been put up for preliminary discussion/consultation. These sites are of different scale from some 10 ha to over 1,500 ha. Nine of the sites are below 29 ha, eight of them are between 30 and 99 ha and eight of them are over 100 ha.

Further assumptions are made to these site areas to analyse the reclamation proposal:

- For sites fall within 10-29 ha: an average size of 20 ha
- For sites fall within 30-99 ha: an average size of 65 ha
- South Cheung Chau : 1,500 ha and Lamma North : 400 ha

[1] Population forecast of Hong Kong made by the Census and Statistics Department in 2010. Recent forecast released on 1 August 2012 for 2039 would be 8.47 million, i.e. – a reduction of some 0.43 million.

[2] The Media Briefing documents of the Reclamation Consultation, Civil Engineering and Development Department and Planning Department dated 4 January 2012.

[3] See P.10 and P.11 of the Media Briefing documents of the Reclamation Consultation.

Speakers and Papers

Table 3: Analysis of Reclamation Sites

	No. of Sites [A]	Total reclamation area (ha) [B]	(%)	Average reclamation area (ha) [B] / [A]
Artificial Island	3	2,000	47%	667
Reclamation to Connect Islands	2	1,000	23%	500
Reclamation upon artificial or disturbed shoreline	13	645	15%	50
Reclamation upon natural but not protected shoreline	7	655	15%	94
Total:	**25**	**4,300**	100%	

This could mean some 4,300 ha of new land if all reclamations would go ahead as proposed. This figure is significantly more than the 1,500 ha of land shortage figure as set out in the Reclamation Consultation. About 30% of the areas will be along the shoreline and the remaining 70% of these areas will be in the form of large artificial islands and/or reclamation to connect islands.

We shall look at the population density in some examples of existing built up areas of new towns, and islands and new development areas for comparison. .

Existing built up areas and new development areas

For the existing built up areas, the selections include Tseung Kwan O, Tsing Yi and Ma Wan with the latter two being islands with road network.

Table 4: Planned population density of Tseung Kwan O, Ma Wan and Tsing Yi

	Tsueng Kwan O	Tsing Yi	Ma Wan
Total area (ha)	1,732	1,067	101
Area after deducting Green Belt (ha)	972	644	69
Planned population	450,000	203,700	15,000
Planned population density (per ha) *(Total Area)*	260	191	149
Planned population density (per ha) *(Deducted Green Belt)*	463	317	218

Sources: Outline Zoning Plans / Planning Department

Tsueng Kwan O and Tsing Yi are served by MTR while only limited vehicular traffic has been allowed for Ma Wan Island.

The inclusion of green areas/mountains around these two areas would have significant impact onto the population density. Only when the green belt areas excluded from the calculation, then the population density in Tseung Kwan O area would exceed the Government Assumed Development Density, whereas the other analyzed density would all be well below.

This paper also studied the development density in various new development areas which public/community engagements and feasibility consultancy study are ongoing/will be undertaken. The analysis revealed that only Fanling North and Tung Chung (assuming the green belt areas being excluded) will be able to attain the Government Assumed Development Density or exceed the same. Both areas are served by MTR. Whereas for the rest of the areas (including Kwun Tung North which is planned to be served by MTR, Ping Che, Anderson Road Quarry and Kong Nga Po) will not be able to reach the Government Assumed Development Density.

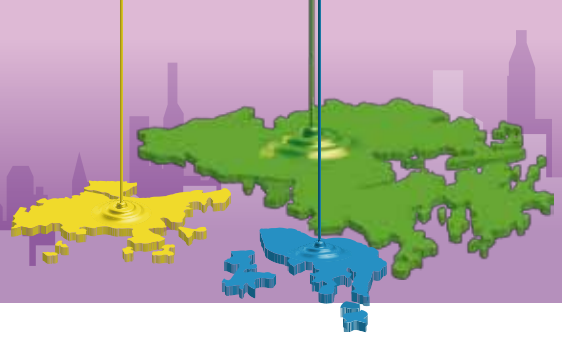


Table 5: Development Density in New Development Areas

	Developable Area (Hectare)	Residential units to be provided	Planning Population	Planned population density (per hectare)	Support of MTR (current / future)	Remarks
Public /Community Engagement						
North East New Territories Stage 3 – NDAs						
Ping Che	153	6,500	17,600	115	No	First population intake from 2022 – 2031 (Phase)
Kwu Tung North	251	28,700	81,900	326	Yes	
Fanling North	129	18,600	52,100	404	Yes	
Total	533	53,800	151,600	284		
Tung Chung New Town Extension Development Stage 1	206 (Existing)[1] 486 (Total)[2]	Not yet determined	108,000 (Existing) 220,000 (Whole New Town)	524 453	Yes	Study target to end in 2014
Anderson Road Quarry Stage 2	86[3]	8,650	23,000	267	No	Land availability: 2019-2020
Engineering Feasibility Study						
Kong Nga Po	18.9	1,200	3,600	190	No	Land availability: 2020

Source: OZP, relevant consultation documents and tender document.

Remarks:
[1] Area excludes existing green belt
[2] Total areas includes 280 ha of extension area
[3] Area of Anderson Road Quarry

The above analysis revealed that for development lands to achieve the Government Assumed Development Density, the MTR connection would seem to be a necessary condition.

If the hope of land reserve lies with reclamation and the large artificial islands and connections of islands would be the major source of supply, then the connectivity issue by mass transportation means to the main urban areas would be the major challenge.

In the light of these constrains of land supply, it would be prudent for the government to re-examine other alternatives to enhance land supply.

The Missing Jigsaw in the Land Supply Strategy

Land Resumption and Land Premium Assessment Policy

A major reason for the government to re-use of the new town resumption model is the avoidance of the "collusion between the government and the business". With this government mindset continue, the efficient use of existing private land resources would be much restricted.

For an existing piece of private land which is restricted to a certain use under the government lease, a land premium is required to be paid for the change of land use which is permitted under the town planning zoning. This is an important route to meet with the changing needs of Hong Kong. The underlying principle for

charging the land premium is for the government to take away all the benefit in land value appreciation arising from the land exchange/lease modification. In other words, a private land owner cannot share part of the gain in value created in the land exchange process. It is unfortunate that the current land premium policy in land exchange cases has been perceived by some commentators as to be beneficial to the private land owners.

In principle, only those land exchange projects which land costs (including the existing use value plus the government assessed land premium) are below the market value of the lands after the change of use would be worthwhile to undertake. In the market, land premium negotiations usually would take long time to come to an agreement and land owners have to choose carefully the right time to commit so as to achieve profitable developments.

The government has introduced the industrial re-vitalisation policy which nil premium is charged if the relevant buildings meet with the stipulated criteria and some impact is noted in the market. If the government is prepared to re-visit its land premium policy and to allow part of the value created in the process to the private market, this should promote more lands to be converted to meet the needs of Hong Kong.

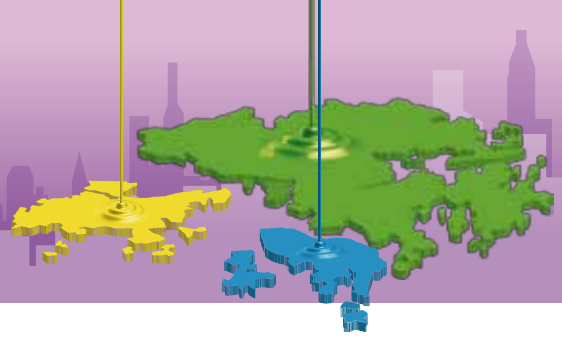
Change of Land Use

Another area requires further consideration would relate to town planning. Has the planning process been serving its function well as a facilitator/promoter of change of use? A recent incident in Tsuen Wan Industrial area would provide some clues: various land owners had objected to the proposed CDA zonings which have been perceived to facilitate the government lands to be redeveloped into residential use. How then would the government expect that such zonings would be implemented by the private owners?

Given the many challenges including resumption, planning and infrastructure provisions that need to overcome, the outlook of the land supply would still be uncertain.

The use of existing private land resources have been restricted by such factors as: mindset of avoidance of the "collusion between the government and the business", full land premium charged by the government and certain planning intentions not supported by the private owners.

Without this important piece of jigsaw of private lands in the land supply map, the development land creation exercise of Hong Kong would have to rely upon the government effort alone.



Appendix –Residential supply (2011 to 2020) suggested by Mrs Carrie Lam

2011 to 2015

Application List	Land in application list not yet sold	13,500
	Kai Tak new development area	8,000
West Rail Line	Tsuen Wan 5 (Bayside)	2,384
	Tsuen Wan 6	894
	Long Ping Station (North) development	832
	Long Ping Station (South) development	720
MTR	Tin Shui Wai LRT Terminus development	1,600
	LOHAS Park (Phase 4)	1,800
URA	-	5,000
Lease modification / Land Exchange	-	15,000
Private redevelopment	-	10,000
	Sub-total	**59,730**

2016 to 2020

Application List	Kai Tak new development area	8,000
	North East NT new NDAs	30,000
	Anderson Road Quarry development	8,000
	Lamma Island Quarry development	2,000
	Land zoned as Industrial use	TBC
	Land zoned as GIC use	5,000
	Green Belt	TBC
	Kam Sheung Road Development & Pat Heung Maintenance Centre Development	8,700
	Siu Ho Wan Depot development	13,000
URA	-	5,000
Lease modification / Land Exchange	-	15,000
Private redevelopment	-	10,000
	Sub-total	**104,700**

Remarks:

[1] There will be a supply of 16,000 units before 2019.

[2] Estimated figures.

- Land supply of approximately 19,500 units was provided in 2011 to 2012.
- The above figures exclude future supply from reclamation, development of rock cavern and quarry sites.

Speakers and Papers

Sr Tony TSE Wai Chuen
Director, Brand Star Limited

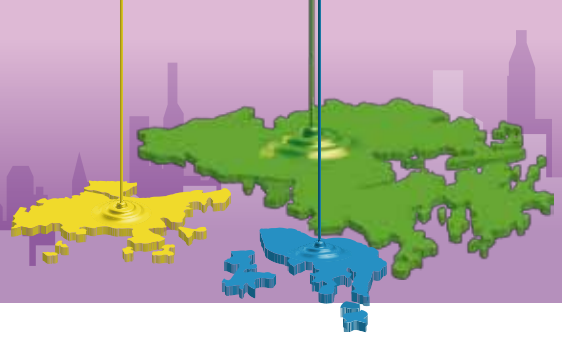
Sr Tse Wai Chuen Tony is a Fellow Member of the Hong Kong Institute of Surveyors and the Royal Institution of Chartered Surveyors. He was the Chairman of the Surveyors Registration Board from 2002-2003 and the President of the Hong Kong Institute of Surveyors from 2003-2004. After graduation from the Hong Kong Polytechnic (now Hong Kong Polytechnic University), Mr. Tse joined the Hong Kong Civil Services and worked in different offices of Public Works Department (now is Lands Department) for 12 years. He was Senior Estate Surveyor when leaving the public sector. Thereafter, Sr Tse had been working in the private sector and holding senior position in various companies and organizations including Hongkong Land Property Company Limited, Chesterton Petty Ltd., Emperor International Holdings Limited, Urban Renewal Authority, Henderson Land Development Company Limited and Henderson Sunlight Asset Management Limited, etc. Sr Tse is now a director of Brand Star Limited, a property development and asset management consultancy firm.

Sr Tse has over 35 years' experience in real estate business. Apart from the daily business, Sr Tse is also keen in community services. He has served as a member of the Hong Kong Town Planning Board, member of the Land and Building Advisory Committee, member of Municipal Services Appeals Board, member of the Disciplinary Board Panel(Land Survey Ordinance), the Hong Kong Trade Development Council Infrastructure Development Committee member and Chairman of the Real Estate Services Training Board of the Hong Kong Vocational Training Council. Sr Tse is currently the President of Hong Kong professional and Senior Executives Association, Election Committee (Architectural, Surveying and Planning subsector groups) member, and the member of Disciplinary Panel of the Hong Kong Institute of Certified Public Accountants.

Controls – For Better Development?

The first land auction in Hong Kong was conducted hundred years ago. To date there have been hundreds thousand of building sites in the territory sold by the government. However one could not too difficult to note that the design and form of buildings built at a certain period of time tend to be quite typical or sometimes identical. Buildings with innovative design and of individual character are few. One may say that such phenomenon is due to market forces. Is this in fact the case?

In Hong Kong, developments are basically governed by three major elements. They are government lease conditions, planning regulations and buildings ordinance. Over the past years such rules and regulations have undergone quite some changes to meet different circumstances and government policies prevailing at the material time and more and more controls are added. It now takes much more time to get through all these hurdles and to obtain development approvals from relevant authorities.



Lease Conditions

One of the major development controls is lease conditions. In Hong Kong all land are leased from the government and development thereon are subject to the compliance of the lease conditions.

When Hong Kong Island was colonized and since 1842 all land was named as "Crown Land". Those private lots in NT registered under Qing Dynasty land tenure system before 1898 were called "紅契" which were later registered as "Block Crown Lease" and termed "Old Schedule Lots". Thereafter, sites sold between 1906 to 1946 were known as New Grant Lots. There were publications of two important Gazette Notifications (GNs), most commonly referred as GN365 and GN 364 listing out the development conditions applicable to sites in NT granted during certain periods of time. GN365 had no restrictions on users or site coverage, but with storey and height controls whereas GN364 provided conditions including maximum site coverage, building height, minimum floor height and maximum number of storey. These GN conditions were ceased to be adopted for lots sold after World War II as since then each lot sold would be subject to its own set of lease conditions.

For urban area, each lot granted was subject to its own lease conditions. For lots granted in the early period, their terms were mainly with specifications of dimensions of site, minimum value cost spent and time limit to the construction of lot. Later there were more conditions incorporated .The most common included, rate and range clause, DDH clause, offensive trade clause, tree preservation clause, users clause (such as private house(s), private residence, dwelling house, houses of European type), height limits etc. To date most of the lease conditions have been standardized and quite some more engineering clauses are included.

Town Planning Regulation

In 1939, the first Town Planning Ordinance was enacted which mainly designated sites in urban area on plan for different uses. The first Outline Zoning Plan was published in 1973. Apart from usage it also earmarked development density for land within the boundary of the Plan. To date there are more development controls under OZP including use, development density, height and storey, coverage etc. and areas in Hong Kong are almost covered by Outline Zoning Plan.

Building Regulation

In 1856, the first building ordinance enacted was Buildings and Nuisance Ordinance which stipulated the minimum building structure requirements for European houses only. Following the outbreak of bubonic plague in 1894, the Public Health and Buildings Ordinance covering both health and building structure was enacted in 1903. It provided a more comprehensive and integrated control on design of buildings. This ordinance had been in force until 1935 when the ordinance was changed and focused more on technical standards for building construction. The 1955 Buildings Ordinance detailed the regulations covering different aspects of building operations, similar to the current Buildings Ordinance. In 1962 density control was changed from volume to plot-ratio and there were controls on site coverage, street shadow requirements etc.

Since developments are controlled by the above said three elements, let's explore more and see how some of the controls would affect developments in our city.

Speakers and Papers

Ir HON Chi Keung, JP
Director of Civil Engineering and Development,
Civil Engineering and Development Department, HKSAR Government

- Ir Hon graduated from the Department of Civil Engineering, the University of Hong Kong in 1980 and has become a qualified Engineer since 1983.

- He has been working in the Hong Kong SAR Government since graduation from the University.

- During his service in the Government, he has worked in different positions including Chief Engineer and Assistant Director in the Drainage Services Department, Deputy Head of the Civil Engineering Office and Project Manager of the Hong Kong Island and Islands Office in the Civil Engineering and Development Department. He has become the Director of Civil Engineering and Development since January 2011.

- In the different positions, he has taken part in the implementation of various major public infrastructure projects including the Harbour Area Treatment Scheme, Kai Tak Transfer Tunnel & Tai Hang Tung Storage Scheme, Central Reclamation Phase III, Wan Chai Development Phase II, Central-Wan Chai Bypass, Kai Tak Development, Liangtang / Heung Yuen Wai Boundary Control Point, New Development Areas in New Territories, etc.

- Current professional affiliations:
  - Fellow Member of the Hong Kong Institution of Engineers (HKIE);
  - Member of the Institution of Civil Engineers, U.K. (ICE); and
  - Fellow Member of the Chartered Institute of Arbitrators, U.K.

The Development and Supply of Land in Hong Kong

In the latter half of the last century, high density development in Hong Kong had accommodated the rapid increase in population and propelled its economic growth. The latest forecast reveals that population growth will continue in the coming decades and generate increasing demand for land for housing and public facilities provision. Moreover, to achieve the vision of Hong Kong as Asia's world city, the HKSAR Government is focusing on strategic issues including improvement to quality living environment, enhancement of economic competitiveness and strengthening of linkage with Mainland. These needs and visions require further development and supply of sufficient land in the short, medium and long terms.

To help tackle these unrelenting demands and contribute to the initiatives for pursuing a sustainable development in Hong Kong, the Civil Engineering and Development Department (CEDD) has been actively undertaking various extensive land development projects which are under different stages of implementation. This paper will illustrate the background, key features and the latest developments of the CEDD's efforts in addressing the four themes of population growth, economic development, better living environment and future needs.

Land development and supply in Hong Kong are being driven by population growth, economic development and public's aspiration for a better living environment. These needs generate increasing demand for land for the provision of housing, public facilities, offices, hotels, infrastructures and for the improvement of living environment including lower development density, more open space and better natural environment.

To address such unrelenting demand, the HKSAR Government has devised a number of initiatives in order to boost land development and supply. In particular, the Chief Executive announces in his 2011-2012 Policy Address that we have to innovate to expand our land resources. Six measures are put forward, viz. releasing industrial land; exploring the option of reclamation on an appropriate scale outside Victoria Harbour; exploring the use of rock caverns to reprovision suitable existing public facilities and releasing such sites for housing and other uses; looking into the use of green belts areas that are devegetated, deserted or formed; re-examining certain "Government, Institution or Community" uses; and exploring the possibility of converting into housing land some deserted or under-utilised agricultural land in North District and Yuen Long.

To take forward theses initiatives, the Civil Engineering and Development Department (CEDD) has been actively undertaking planning and implementation of various extensive land and infrastructure development projects spanning the territory. To contribute to the new initiatives, the CEDD had launched the Stage 1 Public Engagement exercise in November 2011 on "Enhancing Land Supply Strategy" and specifically consulted the public on the study of reclamation on an appropriate scale outside Victoria Harbour and the use of rock caverns. The following paragraphs are to illustrate the background, key features and the latest developments of the CEDD's initiatives under four themes of population growth, economic development, better living environment and future needs.

A. Land and Infrastructure Developments for Population Growth

Housing Sites in Kai Tak Development

Kai Tak Development (KTD) is a mega and highly complex development project spanning over 320 hectares. The site occupies the largest available land fronting the Victoria Harbour. It offers opportunities to bring the harbour to the people, provides quality living environment for around 89,000 residents, as well as revitalises its surrounding districts such as Kowloon City, Wong Tai Sin and Kwun Tong. The Kai Tak Outline Zoning Plan (OZP) provides a statutory framework for the development in the area. Key development components include a cruise terminal, a multi-purpose stadium complex, Government offices, developments for commercial uses such as office and hotel, a metro park and a runway park, public housing sites, grid neighbourhood residential sites, Centre of Excellence in Paediatrics, Shatin to Central Link and Trunk Road T2.

(Artist's impression of KTD)

The public rental housing in the North Apron of KTD comprises two estates, i.e. Kai Ching Estate (啟晴邨) and Tak Long Estate (德朗邨), together in 15 blocks to provide about 13,300 numbers of flats for accommodating around 33,000 people. The estates are located close to Rhythm Garden, Choi Hung Estate, Richland Gardens and the future Kai Tak Station of Shatin to Central Link. Targeted for completion in 2013 for population intake, both estates will be well connected with the surrounding areas by public transportation, footbridges and subways.

Speakers and Papers

(Artist's impression of Kai Ching & Tak Long Estates)

Embracing the planning vision of a "Green Web for Sustainable Development" and covering a total area of 9.17 hectares, the two public housing sites combine a people-oriented design with beautifully landscaped surroundings and environmentally friendly features to create a unique green home for the residents. Throughout the development, green features are being put in place to reduce environmental impact. Solar power will be captured by photovoltaic panels, whilst energy efficient LED and fluorescent light fittings will be installed. Rainwater harvesting and condensed water from air-conditioning will help irrigate the vegetation, and wherever possible, green and recycled materials will be used.

Another residential area in KTD is the Grid Neighbourhood area. The design of this residential development has been refined in the latest Kai Tak OZP by reducing the density of high-rise buildings to feature a design mix of medium towers and low rise blocks with beautiful courtyards.

(Artist's impression of Grid Neighbourhood)

There are other residential areas in KTD to be developed, such as those located at the North Apron near To Kwa Wan and at the former Runway near the future Kai Tak Cruise Terminal.

Anderson Road Development

The Development at Anderson Road is a large scale multi-disciplinary project to meet the long term public housing demand. The development will provide about 16,100 public housing units for about 48,000 people in phases between 2015 and 2016. CEDD is the works agent responsible for the site formation and associated infrastructure works.

(Photomontage of the southern estate of the development)

Site formation for 20 hectares of land platforms and construction of infrastructure has commenced in January 2008 for completion in end 2014. The first phase of platform formation of about 7 hectares has been completed and the construction of public housing blocks has now commenced.

To address the concerns of nearby residents about the environmental impacts and perceived hazard/nuisance arising from the blasting works, an experienced blasting specialist has been employed to ensure that stringent safety requirements and high standard environmental protective measures are incorporated into the method of working. The use of innovative blasting mats and super-silenced drilling machines has also been introduced.

(Site of Development at Anderson Road Project)

The remaining phase of platform formation is targeted for completion in June 2013. There will be substantial amount of works including formation of platform, construction of roads, drainage, utilities, retaining walls and footbridges to be carried out in the coming two to three years to support public housing development.

Anderson Road Quarry

The Anderson Road Quarry is the largest quarry site in Kowloon, and its quarry operation is close to completion with rehabilitation currently anticipated to be completed in mid-2016.

An 18-month Planning Study on Future Land Use at Anderson Road Quarry (planning study) has commenced in January 2011 to examine the future land use and explore the development potential of the quarry for residential and other uses. In view of high proportion of public housing sites in the vicinity of the quarry area, the planned population of the development area is 23,000 with a private-to-subsidized housing ratio 80:20 so as to achieve a more overall balanced housing mix for Kwun Tong and Sau Mau Ping areas. The Recommended Outline Development Plan proposed under the planning study will form the basis of future development of the quarry area and for further engineering investigation and detailed design for the necessary infrastructural works.

The development area is about 86 hectares, out of which a land platform of about 40 hectares for housing development would be formed. Furthermore, a part of the site will be developed for a quarry park to reflect the historical characteristics and features of this quarry site. Apart from land platform formation, there will be associated infrastructure including roads, bridges, greening measures and cavern developments for quarry park and commercial uses.

(Photomontage of Anderson Road Quarry Development)

Speakers and Papers

During the community engagement conducted under the planning study, the public has expressed grave concern on potential traffic impacts. Road improvement works are proposed for the road junctions at Shun Lee Tsuen area, new Clear Water Bay Road & Anderson Road junction, and Lin Tak Road to mitigate traffic impacts. Furthermore, pedestrian connectivity routes with footbridges, lift towers and escalators are proposed to connect the development area to the Kwun Tong town centre. These issues will be further studied in the ensuing engineering study scheduled to start soon for completion by early 2014. The target is to commence site formation work after the completion of the quarry rehabilitation in mid-2016 with a view to achieving early provision of land.

Tung Chung Remaining Development

According to the Revised Concept Plan for Lantau released in 2007, the Tung Chung New Town is targeted for a community with residential, commercial and recreational facilities for accommodating a population of 220,000. Up to now, the infrastructure for a total development area of about 155 hectares has been completed with the capacity to support a population of about 108,000 (the current population is about 78,400).

At present, several large-scale infrastructure projects adjoining the Tung Chung New Town are being implemented or planned. These include the Hong Kong-Zhuhai-Macau Bridge, the Tuen Mun-Chek Lap Kok Link as well as the third runway for the airport. These infrastructure projects would boost economical growth at Tung Chung and enhance the potential of developing the area into a regional shopping and tourism node. Whilst recognising the need to expand the Tung Chung New Town to meet the long-term housing need of our community and the aspirations of Tung Chung residents for more commercial and public facilities, we also acknowledge the strong requests from the Green Groups that any development proposals should not affect the village setting and valuable ecology near the Tung Chung River Valley.

(Tung Chung New Town)

Against such background setting, the Planning Department and CEDD jointly commissioned a 30-month study in January 2012 to review and establish the planning and engineering feasibility of the Tung Chung New Town Extension, with focus being placed on the land provision of about 285 hectares by reclamation and using existing land to the East and West of the Tung Chung New Town. It is the Government's overall vision to expand Tung Chung into a sustainable new town by balancing development needs and conservation of natural environment.

The North East New Territories New Development Areas

The North East New Territories New Development Areas (NENT NDAs) consist of three NDAs, namely the Kwu Tung North NDA (KTN NDA), the Fanling North NDA (FLN NDA) and the Ping Che/Ta Kwu Ling NDA (PC/TKL NDA) covering a total area of about 800 hectares. NENT NDAs are major sources of land supply and will play an important role in addressing Hong Kong's long-term housing and employment needs. These NDAs will provide about 150 hectares of housing land supply for over 50,000 new residential units to accommodate about 150,000 people.

The on-going planning and engineering study for the NDAs adopts a sustainable development approach, balancing the housing, employment, community and conservation needs, and encompassing the economic, social and environmental considerations. The development themes of the NDAs as incorporated into the Recommended Outline Development Plans include 'Mixed Development Node' for KTN, 'Riverside

Township' for FLN and 'Quality Business/Residential Area' for PC/TKL.

(North East New Territories New Development Areas)

This concept of sustainable development will be supplemented by a comprehensive pedestrian and cycling network with supporting facilities to promote walking and cycling within the three NDAs, breezeways along major prevailing wind directions to allow effective air movements, view-corridors to protect the long-range views towards the green backdrop and other natural scenery, a comprehensive open space system to provide greenery and reduce heat island effect, and green initiatives such as district cooling system, electric bus, renewable energy and reuse of treated effluent to reduce carbon emission.

While the study is expected to be completed in mid-2013, the NDAs will be developed in phases with the first population intake programmed for 2022 and the entire NENT NDAs project to be completed by 2031.

Hung Shui Kiu New Development Area

The Hung Shui Kiu New Development Area (HSK NDA) covers a total area of about 790 hectares. The NDA presently has a mixed urban-rural character with land occupied by open storage / port back-up uses, villages and some low-density residential developments. It is intended to develop the NDA for multiple purposes, including the provision of land for housing to cope with population growth; provision of infrastructure, and Government, institution and community facilities to improve rural environment; heritage conservation; and development of land for the six Industries as mentioned in 2009-2010 Policy Address and the increasing interaction with Shenzhen, particularly the Qianhai area, to enhance the economic activities in the North West New Territories.

About 64% of the land within the NDA is privately owned. The implementation mechanism and mode of land acquisition will be carefully formulated with due consideration to the feedback received during the 3-stage community engagement exercises.

(Hung Shui Kiu New Development Area)

To support the population growth and economic activities generated in the NDA, new major infrastructure being investigated includes a new MTR Hung Shui Kiu Station to access the environmentally friendly mass transportation system to urban area and a potential railway station connecting to the Hong Kong-Shenzhen Western Express Line to provide a fast and convenient means for travelling to the Shenzhen Airport and the Qianhai area.

The planning and engineering study for formulating development proposals for the HSK NDA has commenced in August 2011 for completion in 2014.

Speakers and Papers

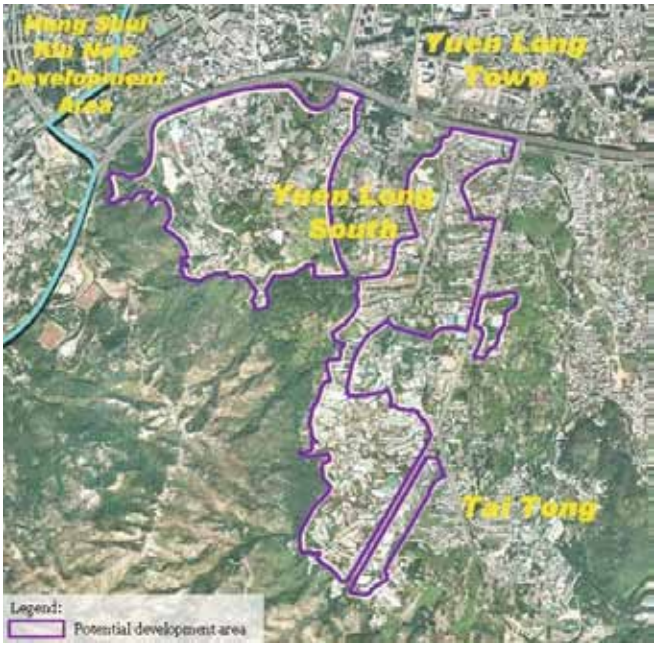
The NDA is programmed to have the first population intake by the year of 2024.

Yuen Long South Housing Sites

A planning and engineering study will soon be carried out to review the development potential of about 200 hectares of land in the Yuen Long south with a view to identifying suitable sites for private and public housing, and providing supporting infrastructure. At present, the subject land is generally characterised by haphazard low-density housing, agricultural and rural industrial activities, and open storage.

The study will address the key issues including: (i) inadequate existing infrastructure, such as roads, drainage and sewerage, to serve the proposed housing sites; (ii) large portions of the land likely lying on marble bedrock with cavities; and (iii) about 80% of the land being under private ownership.

The development proposals will be formulated taking account of the results of various technical assessments and comments received from the public in a 3-stage community engagement exercise.



(Potential Development Area in Yuen Long South)

We plan to complete the study in mid-2015. The sites for housing development are programmed for availability starting from 2021.

B. Land and Infrastructure Developments for Economic Development

Liantang/Heung Yuen Wai Boundary Control Point

In September 2008, the HKSAR Government and the Shenzhen Municipal People's Government jointly announced the implementation of a new Boundary Control Point (BCP) at Liantang/Heung Yuen Wai (LT/HYW) in the north-eastern New Territories to serve cross-boundary goods vehicles and passengers travelling between Hong Kong (HK) and Shenzhen (SZ) East. In March 2011, the BCP Project has been included as one of the seven major items of Hong Kong and Guangdong Co-operation under the National 12th Five-Year Plan.

The new BCP will connect with the Shenzhen Eastern Corridor and provide an efficient access across the border to the eastern part of Guangdong, including Shantou, Shanwei, Chaozhou, etc. and the adjacent provinces such as Fujian and Jiangxi, which will greatly facilitate future regional cooperation and development. Furthermore, it will improve and enhance the overall transport network in New Territories East and provide a convenient access to the proposed Ping Che/Ta Kwu Ling New Development Area by the proposed connecting road linking up the new BCP with Fanling Highway at Tai Po.

The scope of the project comprises formation of about 23 hectares of land for the development of the HK portion of the LT/HYW BCP, provision of BCP buildings and facilities, construction of a 11km long dual 2-lane trunk road connecting the new BCP with Fanling Highway, improvement to about 4.5 km long section of Shenzhen River, reprovisioning of Chuk Yuen Village and associated drainage, sewerage and landscaping works.

(Liantang/Heung Yuen Wai Boundary Control Point)

The new BCP is a two storey design with facilities for goods vehicles and public transport interchange on the ground floor. The upper floor will serve passengers, private cars and coaches. The design handling capacity of the BCP is 30,000 passengers and 17,850 vehicles trips daily. To meet the aspiration and convenience of the public, a carpark with more than 400 parking spaces, pick-up/drop-off points for private cars and a pedestrian subway linking the BCP and the adjacent Lin Ma Hang Road will be provided in the BCP. It will be the first land-based BCP with direct vehicle/passenger access facilities.

The site formation and infrastructure works are scheduled to commence soon for completion in early 2018. The detailed design and construction of building works are targeted for commencement in early 2013 and early 2015 respectively with a view to commissioning the new BCP in mid-2018.

The implementation of the LT/HYW BCP requires resumption and clearance of the whole Chuk Yuen Village. The works for the reprovisioning of Chuk Yuen Village have been substantially completed in March 2012. Furthermore, a number of domestic structures, building lots and graves will be affected by the BCP and connecting road. In order to facilitate the resumption and clearance of land, the Government has offered special compensation and rehousing arrangement to the affected villagers, which includes the cottage house option and special ex-gratia cash allowance on an ex-gratia basis.

Lok Ma Chau Loop

For historical reason, Shenzhen (SZ) River has long been serving as the boundary between Hong Kong (HK) and SZ. Located to the north of the old course of the SZ River, the LMC Loop was originally within SZ. After the realignment of this reach of the river in 1997, the Loop with an area of about 87 hectares falls to the south of the new river course.

In 2008, the HK and SZ Governments agreed to jointly commission a planning and engineering study for the development of the Loop under the principle of "co-study, co-development and mutual benefit". The development of the Loop will tap the land resources of the Loop to meet future development needs and consolidate the strategic positions of HK and SZ in the Pan-Pearl River Delta region.

Having regard to the public views collected in HK and SZ, both Governments agreed that the Loop would be developed with higher education as the leading land use, complemented by high-tech research and development, as well as cultural and creative industries.

Speakers and Papers

(Lok Ma Chau Loop)

The on-going planning and engineering study on development of the Loop, is expected to be completed in early 2013. The prime objective of the study is to formulate a comprehensive plan for developing the Loop into a sustainable, environmentally friendly, energy efficient and people oriented community. Upon completion of the study, the development project will be implemented under a fast track programme, involving various complex tasks for providing infrastructure and engineering works to be undertaken in parallel, so as to achieve the current target of commissioning Phase 1 of the Loop development in 2020. The Loop is scheduled for full development in 2030 to dovetail with the implementation programme of KTN NDA.

International Cruise Terminal at Kai Tak

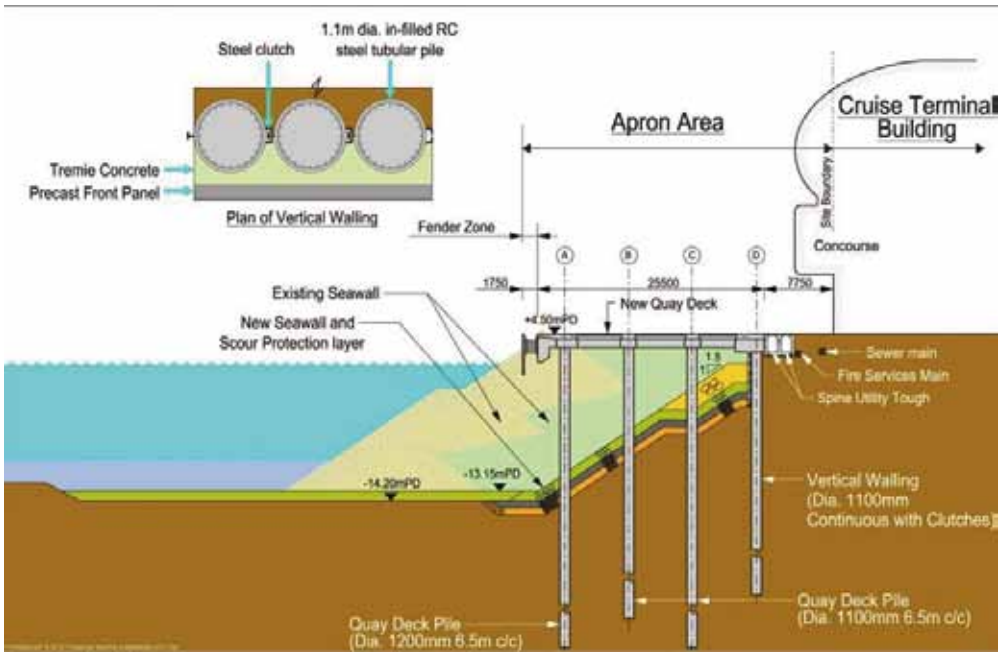
Since early 2000s, the Tourism Commission and the Hong Kong Tourism Board had commissioned consultancy studies to examine the need for new cruise terminal facilities in Hong Kong. The studies indicated positive growth trends in cruise passenger volumes and concluded that Hong Kong was in need of an additional berth between 2009 and 2015, and one to two further berths beyond 2015 to sustain its development as a regional cruise hub. To this end, the HKSAR Government has committed to developing Hong Kong into a leading regional cruise hub and proceeding with the construction of Kai Tak cruise terminal development, which comprises three major elements, viz. the cruise terminal building, the apron facilities and the site formation cum berthing structure.

(Artist's impression of Kai Tak Cruise Terminal)

The site formation cum berthing structure cover mainly the construction of two alongside cruise berths capable of accommodating various types of cruise vessels, including the largest mega size cruise vessels of gross tonnage up to 220,000 tonnes. Major works items include apron area with piled quay deck (850m by 35m), seawall re-construction (about 1,100m) and dredging of about 1.38Mm^3 of marine mud over 86 hectares of seabed.

In compliance with the Protection of the Harbour Ordinance requirements, "zero reclamation" principle is employed in designing the cruise terminal berthing structure. In this regard, the terminal quay deck is constructed within the land limit of the former runway through setting back the existing sloping seawall towards the landside when deepening the sea-bed. Different from the conventional seawall construction, the seawall structure is in the form of a vertical walling

consisting of contiguous steel tubular piles. The structural arrangement allows parallel construction of cruise berths and the cruise terminal building and as a result, enables advancement of the commissioning of the first cruise berth in 2013. The walling is also designed to integrate as part of the quay deck structure to achieve cost effectiveness. The diagram below depicts the seawall structure.



(Kai Tak Cruise Terminal – Seawall Construction)

The site formation works has commenced in end November 2009 and are progressing satisfactorily. All piling works have been completed and the quay deck of the first berth has been concreted, with fitting-out works ongoing. The seawall reconstruction for the first berth has largely been completed and that for the second berth is progressing smoothly with target completion in 2014. After the completion of dredging works in 2015, the second berth will also be able to accommodate the largest cruise vessels.

Environmentally Friendly Linkage System (EFLS)

In December 2009, CEDD commissioned a feasibility study on the EFLS to assess the engineering feasibility, traffic impact, land requirement, environmental impacts, operation viability, financial performance and economic return. The scope of the EFLS study also covers possible extension of the EFLS to the hinterland with a view to addressing the public aspirations for the enhancement of connectivity and integration between the Kai Tak Development (KTD) and the hinterland.

In his 2011-12 Policy Address, the Chief Executive announces that we will adopt a visionary, co-ordinated and integrated approach to transform Kowloon East, comprising the KTD, Kwun Tong and Kowloon Bay, into an attractive core business district (CBD) to sustain Hong Kong's economic development. To facilitate the transformation of the former industrial areas into another key CBD, it is important that the infrastructure works and facilities should be well-designed and related well to the broad development strategies of enhancing connectivity, branding the place with quality urban design and promoting diversity for the Kowloon East area. In drawing up the network alignments, the EFLS study considers the important role of the proposed EFLS in "Energizing Kowloon East", i.e. to enhance inter-district and intra-district connectivity of the Kowloon East, and comes up with a proposal to effectively cope with the development strategies for the Kowloon East CBD.

The EFLS study suggests the EFLS to be an elevated monorail system and proposes a 9 km 12-station line linking the Mass Transit Railway (MTR) Kowloon Bay Station, through Wang Kwong Road to the Station

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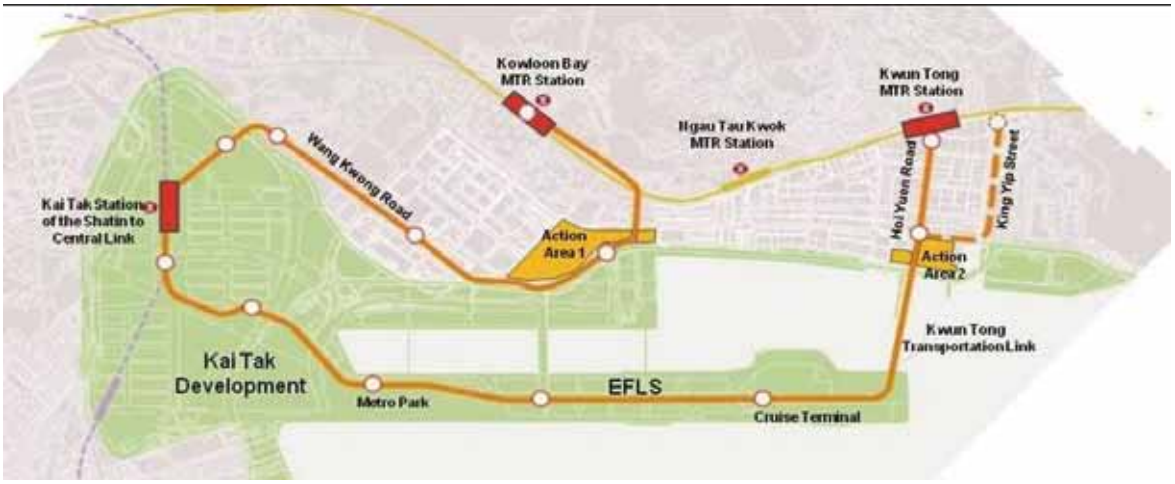
Square in KTD, where it can interchange with the Kai Tak Station of the future SCL, and then all the way along the former runway before crossing the Kwun Tong Typhoon Shelter at the tip of the runway via the Kwun Tong Transportation Link and terminating at the MTR Kwun Tong Station. The proposed EFLS alignment plan is shown below.



(Proposed EFLS Alignment Plan)

The provision of a station is mainly determined based on the site topography and the forecast passenger demand thereat. The 12 stations proposed by the EFLS study will capture patronage generated by major developments in Kowloon East currently not being served by the existing and planned MTR lines. The EFLS study proposes a very simple alignment which offers a favourable condition for using monorail, which is aesthetically more appealing and has comparatively slimmer viaducts and supporting structures than other rail systems. In addition, the monorail system will enhance tourism appeal of Kowloon East. The forecast daily patronage of the proposed monorail line in 2031 is about 200,000.

A two-stage public engagement exercise has been launched to gauge public views on the EFLS proposal. Since the commencement of the Stage 1 Public Engagement in February 2012, we have consulted the relevant District Councils, the Panel on Development of Legislative Council, various stakeholders and concerned parties. Public engagement workshops and local forums have been held to gauge general public views and collect local residents' opinions. Views collected from the Stage 1 Public Engagement will be analyzed and further discussed at the Stage 2 Public Engagement tentatively scheduled for early 2013, with a view to arriving at a consensus reflecting the majority of public views on the way forward for the EFLS.

C. Land and Infrastructure Developments for Better Living Environment

Kai Tak Development

The vision of KTD is "A distinguished, vibrant, attractive and people-oriented community by the Victoria Harbour". An extensive public engagement exercise from 2004 to 2006 under the auspices of the Harbourfront Enhancement Committee led to a blueprint for KTD accommodating people's aspirations for no reclamation and a green, people-oriented environment. The general public consensus resulted in a relatively smooth approval process for the Kai Tak OZP in 2007. Taking into account public aspirations, several important amendments reflecting urban design planning enhancement to the OZP have been recently proposed. Better access to our harbourfront spaces would be provided for public enjoyment due to the proposed amendments. To this end, the latest amendment to the Kai Tak OZP reflecting urban design planning enhancement has been gazetted for public inspection in March 2012.

Nowadays, people in Hong Kong increasingly cherish our natural heritage Victoria Harbour. They demand maximum accessibility to the open spaces and spectacular view around the harbour. In response to these public aspirations, relocation of the two

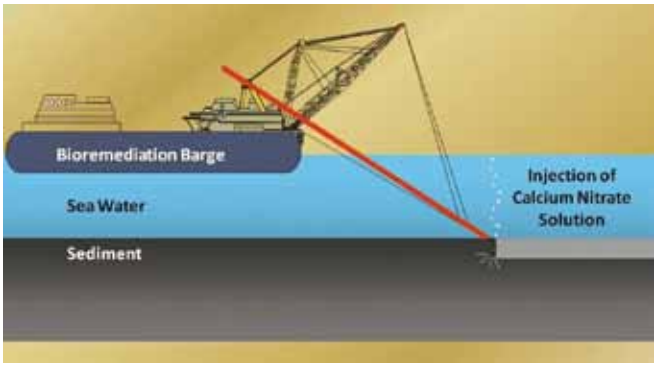
waterfront driveways away from the border of the former runway to the central part of it has been proposed. Hence, the waterfront area will be released for constructing a vehicle-free waterfront walkway for public enjoyment. The amendments to the OZP also propose relocating another driveway at the South Apron away from the waterfront. This will again make more space available and add to the valuable leisure resources for the local community, subject to improved pedestrian access from nearby Kowloon Bay. Ultimately, a continuous vehicle-free waterfront promenade can be provided in KTD.

(Vehicle-free Waterfront Walkway)

The 2.4 km long Kai Tak Nullah serves as a unique connection from Kai Tak's hinterland to the harbourfront. The nullah had a poor reputation for pollution and odour issues. However, with continuous efforts by the Government on improving the drainage and sewerage systems to intercept waste water discharge into storm water drains and transfer polluted discharges to proper treatment facilities, improved water quality and a favourable ecological environment have been achieved. The change has been remarkable so that many people prefer to rename the nullah as "Kai Tak River" today, and aspire to its revitalization and transformation into a unique urban and landscape axis linking the surrounding districts and KTD to promote their integration with a host of features for the community to enjoy. To understand more about the public aspirations for the river, a two-stage public engagement programme called "Building our Kai Tak River" has been organized in 2011. A number of constructive ideas and views have been gathered, which will be taken into account for the river's design. With all the efforts, the Kai Tak River will surely become a valuable green resource linking and bringing vibrancy to the neighbourhoods along its entire route.

(Artist's impression of Revitalized Kai Tak River)

Continuous inflow of polluted water for decades into the long and narrow water body, known as the Kai Tak Approach Channel and Kai Tak Typhoon Shelter, coupled with poor water circulation allowed pollutants to gather and hence generating bad smell. With the development of Kai Tak, both the nullah and the approach channel are going to undergo dramatic transformations into pleasant waterways that perfectly complement the open spaces and green character of KTD. Since the pollutants have settled into a large volume of sediment, which continues to break down and release foul-smelling gases, filling in the approach channel or dredging them are simply not options. Instead, in-situ bioremediation is chosen as the most appropriate option and works have commenced in July 2011. The bioremediation treatment involves firstly dredging part of the sediment settled in the shallow water areas of the approach channel, followed by injecting calcium nitrate solution (an oxidant) into the seabed to accelerate the degrading of odorous substances into mainly odourless and harmless gases and thus reducing offensive smells.



(Method of Bio-remediation Works)

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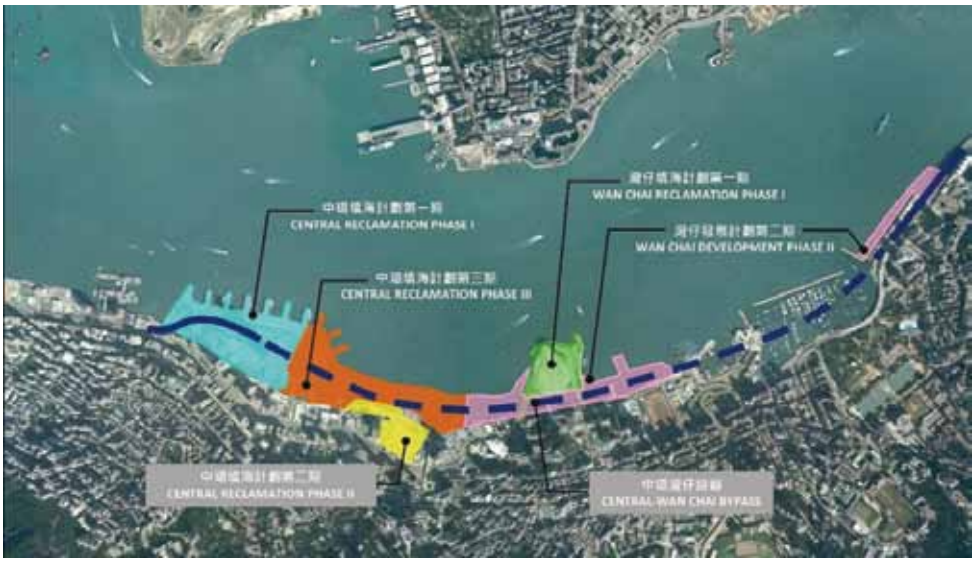
The District Cooling System being built for the first time in Hong Kong within KTD is a large-scale centralised cooling system that produces chilled water at central chiller plants. The chilled water is then distributed through an underground network of water pipes to the air conditioning systems in individual user buildings. DCS offers a whole range of energy efficiency and environmental benefits. As it is not necessary for the end users to install their own chiller plants, it saves capital costs, as well as maintenance and operation costs thereafter. It also helps save space, which allows for more flexible building design. The system is highly energy efficient when compared with traditional air-cooled air-conditioning system, which means lesser greenhouse gas emissions, contributing to achieving the vision of a low carbon economy.

(Principle of Kai Tak Development District Cooling System)

Central and Wan Chai Development

The Central and Wan Chai Development (CWD) represents the strategic development along the northern shore of Hong Kong Island. It serves to provide land for the provision of essential transport infrastructure and also the creation of a vibrant world-class harbourfront promenade for public enjoyment.

The CWD is divided into five phases; Central Reclamation Phases I and II and Wan Chai Reclamation Phase I have been completed before 1997 to accommodate principally the Hong Kong Station of the Airport Railway, the new Central Government Complex and the Hong Kong Convention and Exhibition Centre Extension. Central Reclamation Phase III (CRIII) has been substantially completed in October 2011. Besides providing land for essential transport infrastructure, this phase of the CWD provides land for the development of a world class waterfront promenade. Construction works for Wan Chai Development Phase II (WDII) has commenced in end 2009 for completion in 2017 in order to tie in with the commissioning of the Central – Wan Chai Bypass (CWB), which runs from Central, through Wan Chai and Causeway Bay to link up the Ramsey Street Flyover in Sheung Wan with the existing Island East Corridor in North Point.



(Project Layout of Central and Wan Chai Development)

Following the completion of these last two development phases, a continuous waterfront promenade of about 6 km will be provided along the northern shore of the Hong Kong Island.

With the growing public sentiment against reclamation in the Victoria Harbour, due consideration has been given in the planning of CRIII and WDII to ensure that public views and opinion would be gathered and properly reflected. The public has been engaged at the outset for their vision on the harbourfront developments. A holistic planning approach has then been adopted so that public consensus could be established for the developments at the harbourfront. It is most gratifying to see that through the completion of this public engagement exercise, all the stakeholders involved are content with the process of how the infrastructure projects would be delivered with minimum impact to the Victoria Harbour.

The CWD will affect some existing waterfront facilities, including ferry piers, cross harbour water mains, submarine sewage outfall pipelines, saltwater pumping station and clusters of cooling water pumping stations serving Government and private buildings in the area. Works have been carefully planned and carried out to ensure that the efficient operation of existing services be maintained during the construction of reprovisioning works.

(Photomontage of Waterfront Promenade in Central)

Detailed environmental impact assessments have been carried out to identify adverse environmental impacts arising from these works items and recommend practical mitigation measures. Extensive monitoring stations are set up at various locations along two shores of the Victoria Harbour to monitor the water quality, air quality and noise level.

(Photomontage of Waterfront Promenade in Wan Chai)

Upon the completion of the CWD, a better living environment will be forthcoming:-

- The essential transport infrastructure, in particular CWB, will divert the traffic away from the commercial centre in Central and Wan Chai, thus alleviating the traffic congestion now frequently occurs during the busy hours in the area; and
- With the new harbourfront promenade and footbridge systems linking up the hinterland, there will be a more vibrant harbourfront for public enjoyment.

Through the collaboration among all stakeholders, the new harbourfront will become the centre-piece of Hong Kong.

D. Land and Infrastructure Developments for Many Generations to Come

Enhancing Land Supply Strategy

The Government has been striving to generate land resources through a number of options, including resumption of rural land, redevelopment, land rezoning, reuse of ex-quarry sites, rock cavern development and reclamation. Each of these six options, however, comes with its own challenges and limitation.

Land resumption involves clearance and re-housing issues, which are controversial and lengthy in time, and is thus less predictable in land delivery. Urban renewal also involves land assembly and resumption of private properties. In addition, there are increasing public concerns on heritage conservation and retention of social/business network. Rezoning does not necessarily bring immediate change in land uses. The development of a site may be held up by the need

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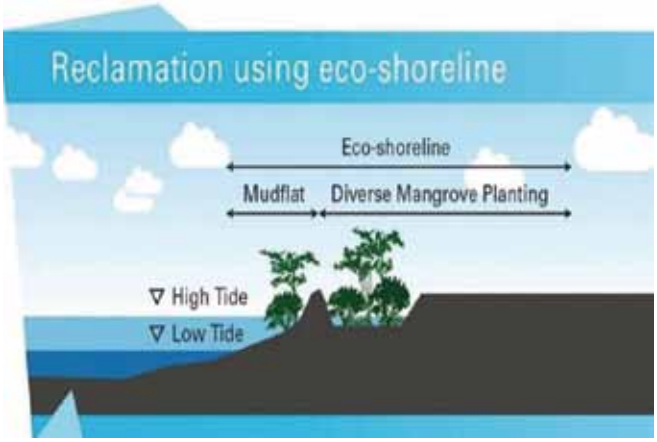
for reprovisioning an existing use. Reuse of ex-quarry sites can only provide limited supply of new land.

A good mix of the land supply options has enabled considerable economic and social growth of Hong Kong in the past. However, as the Government has been cautious in pursuing further reclamation, land supply by reclamation has significantly declined in recent years.

The Enhancing Land Supply Strategy includes studying reclamation outside Victoria Harbour and rock cavern development as sources of land supply. Reclamation at suitable locations on an appropriate scale will not only restore the flexibility and balance among the land supply options, but also be a sustainable solution for handling of surplus public fill arising from land development and contaminated sediment from routine port maintenance. Furthermore, we can create land reserve for responding to future challenges and opportunities.

Public views on reclamation are mixed. Environmental impact and impact on local communities remain the major concerns.



(Reclamation using eco-shoreline)

Continuous improvement in technology such as "non-dredged" reclamation method and introduction of eco-shorelines can mitigate potential impacts on marine ecology and reinstate marine habitats.

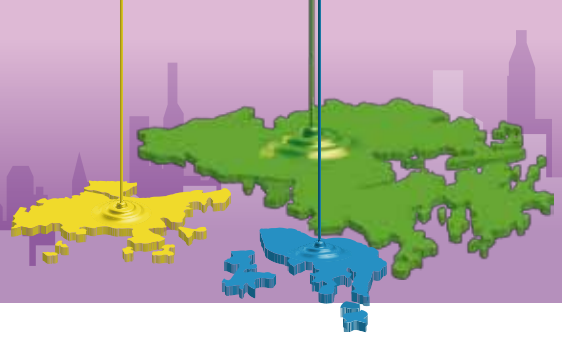
Impact on local communities is not unique to reclamation. It also applies to any development on land. It is therefore of utmost importance to select suitable sites, no matter at sea or on shore, through comprehensive assessment on sustainability, technical feasibility and environmental acceptability.

Previous studies on rock cavern development have shown that 64% of Hong Kong's land area is particularly well-suited for rock cavern development. In the mid-1990s, a few purpose-built rock caverns were constructed to accommodate Government facilities such as the Island West Refuse Transfer Station and the Stanley Sewage Treatment Works.

Relocation of existing Government facilities into rock cavern can bring about significant social and environmental benefits to the community. The released sites can be redeveloped to provide land for the much needed housing developments and provision of various facilities to meet community needs and public aspiration, particularly in urban area where land provision is usually at a premium.

(Island West Refuse Transfer Station Inside Cavern)

We launched the Stage 1 Public Engagement for the Strategy in November 2011 with a view to collecting public views on reclamation outside Victoria Harbour and rock cavern development and the associated site selection criteria for choosing potential sites. The public engagement exercise has been concluded in end March 2012.



More than 10,000 responses to the questionnaire and telephone poll and over 40,000 written submissions have been received from various sources. Many of them were related to the 25 possible reclamation sites released in January 2012 to facilitate discussions on the site selection criteria. We understand that members of the public have strong views on individual reclamation sites. In the subsequent technical studies and site selection exercise, we will attach importance to the selection criteria regarding community impact, taking public views into full consideration. By late 2012, we will publish the Stage 1 Public Engagement report and propose a number of sites which can be further considered for reclamation and rock cavern developments, with a view to commencing the Stage 2 Public Engagement exercise subsequently.

The Outlook

Continuous development and supply of more housing land for supporting the population growth in the short, medium and long terms is a firm commitment of the HKSAR Government. CEDD is pressing ahead with a number of site formation and infrastructure development projects spanning the territory to meet this commitment. Various planning and engineering feasibility studies and public engagement exercises commence progressively. These housing land developments will embrace the latest development concepts and planning visions, and will become modernised, green, high-standard designed, well equipped and people-oriented communities.

Apart from addressing population growth, the HKSAR Government also commits to land development and infrastructure provision for sustaining economic growth. In this regard, CEDD will continue to push ahead the cross-boundary projects to provide an efficient access across the border at Liantang/Heung Yuen Wai, tap the land resources at Lok Mak Chau Loop to meet the future development needs and consolidate the strategic positions of Hong Kong and Shenzhen in the Pan-Pearl River Delta region. In the Kai Tak Development, we will continue with the construction works on cruise terminal and the feasibility study on Environmentally Friendly Linkage System to provide opportunities to develop Hong Kong as a leading regional cruise hub and create a second major office node in Kowloon East for enhancing the long term economic competitiveness.

Victoria Harbour is a precious public asset of Hong Kong. CEDD is taking forward two substantial land development projects on both sides of the harbour at Kai Tak, Central and Wan Chai, and making contribution to the initiative for better living environment including the provision of vibrant world-class waterfront promenades, a highly energy efficient district cooling system in Kai Tak, revitalisation of Kai Tak River and in-situ bioremediation at Kai Talk Approach Channel and Typhoon Shelter.

In a much longer term, Hong Kong needs a more flexible and resilient mix of land supply options. While the existing options (rezoning, redevelopment, land resumption and re-use of ex-quarry sites) will be continually implemented, CEDD will formulate a strategy by public engagement for enhancing land supply with reclamation outside Victoria Harbour and rock cavern development for housing suitable facilities to expand our land resources for our coming generations.

Speakers and Papers

Sr LAU Chi Keung, MH, JP
Director, C K LAU & Associates Limited

After graduation from the Hong Kong Polytechnic in 1970, Sr Lau started his career under training in Leigh & Orange, an architectural and engineering practice. Then, Sr Lau was employed in the Buildings Ordinance Office (now Buildings Department) as a Student Building Surveyor. He was a Senior Building Surveyor when he left the Buildings Ordinance Office in 1981.

In 1981, Sr Lau joined the Henderson Land Development Co. Ltd. and was the General Manager of the Project Management Department when he retired in July 2007. Over the years, he had participated in the project management of over 200 projects of different types of developments, including residential, office, commercial, hotel, industrial, hospital, marina, etc.

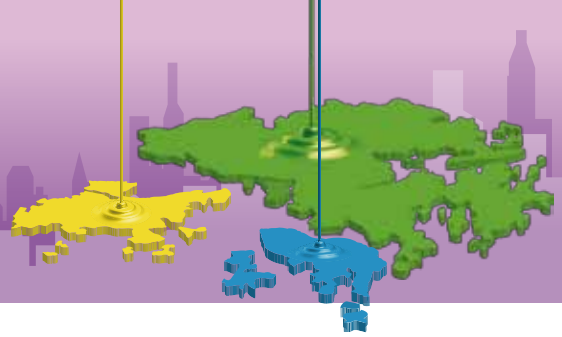
After retiring from the Henderson Land Group in July 2007, Sr Lau continues to participate in the property development market and set up his own business, C.K. Lau & Associates Ltd, with major participation in a number of projects in Hong Kong and China. He also acts as the Consultant to a number of developers on various issues relating to property development on ad hoc basis, and continues to act as the Consultant to the Henderson Land Group.

Land Supply in the Urban Area – Utilization and Problems

Supply of land to meet the need for housing and other uses has always been in the top agenda for any government running a metropolitan city like Hong Kong.

The main source of supply comes from the government through reclamation, urban renewal, new towns and Mass Transit Works.

The other source of supply of land comes from private section, mostly with redevelopment works in the Urban Districts, i.e. the Hong Kong island, and the major part of the Kowloon Peninsula. With the rapid growing of the city in the past several decades, the supply of land in these areas have fast becoming a scarcity. Supply of land in a comparatively large scale like the Mei Foo, Tai Koo Sing, Whampoa Garden, etc. is past history. Even such land newly made- up for developments of, for example, the IFC and the West Kowloon District is no longer available because of the need to protect the Harbor. The recent demand of people to protect and sustain the environment have also deprived many opportunities for new land supply. However the needs are still there, and there are yet possibilities where land can be created to provide the supply for the market needs, whether it be for general or high-end housings, office, commercial or other uses. The speaker wishes to take this opportunity to share with the conference a few examples of how these possibilities are in the becoming, and what the problems and difficulties are in the process of their making.



Supply of land to meet the need for housing and other uses has always been in the top agenda for any government running a metropolitan city like Hong Kong.

There is an old Chinese saying of 衣食住行. The four basic needs for human survival and development are still true for today's living. In today's world however, we may not need to put extra care and effort into such issues like clothing, food or moving around as we are already quite affluent in these areas. Housing for a small place like Hong Kong and with such a large population remains a problem to be really resolved and to meeting the true aspiration of the people, in terms of both quantity and quality.

In Hong Kong we have been working hard for decades to expand the city through reclamation, demolitions (of old buildings and city skyline!), removal of squatters, change of use (from depletion of farming and other agricultural uses, and our lovely country landscape!), massive road and transit works, etc. in the creation of new towns, the only purpose of which is in the fulfilling of the rapid rise in the figures of our population, mostly from immigration across the border. The momentum of a rapid expansion in the later decades of the last century appears to have been slowed down in the recent years, partly due to the apparent reaching the peak of housing supply and others the government's policy to curb the down-trend of the property prices, and the lack of "land" for development or redevelopment purposes.

Hong Kong is a curious place in that property prices, and for that matter the supply of properties is so difficult to predict, even more so than share prices. Property prices are affected by many factors, the recent being the continuous incoming of people (in the manner of immigrants of 150 per day at least !) and vast amount of money (for investment, transits and others in this very free market of Hong Kong) from again across the border. The mere supply of less than 10,000 units per year, and continuously so for many years in the past could not meet the demand from such and perhaps other factors, and more importantly the aspiration of the people of Hong Kong, particularly the young, to have a nice place to live in, either as a first- time owner or an exchange for a bigger and better unit. The outcry for more housing supply has mounting up to become a social matter of great urgency. The government sees this now as the most important issue in its agenda to face and resolve the demand of the public.

We have seen the government trying hard to try implement various actions to increase land supply in Hong Kong. These are generally found in the formation of land in the New Territories, through resumption of old lots and farmlands, reclamation and expansion or creation of new towns. The process is long and sometimes complicated. The supply aims to meet the demand of the general public at large and should feed the appetite of many wanting a space to live in for a long time. There are others who want something more.

The other important source of supply of land, and indeed the demand for such, comes from the Urban Districts. These are land supply in the Hong Kong island, and the major part of the Kowloon Peninsula. With the rapid growing of the city in the past several decades, the supply of land in these areas have fast becoming a scarcity. Supply of land in a comparatively large scale like the Mei Foo, Tai Koo Sing, Whampoa Garden, etc. is past history. Even such land newly made-up for developments of, for example, the IFC and the West Kowloon District is no longer available because of the need to protect the Harbor. The recent demand of people to protect and sustain the environment have also deprived many opportunities for new land supply. However the needs are still there, and there are yet possibilities where land can be created to provide the supply for the market needs, whether it be for general or high-end housings, office, commercial or other uses. The speaker wishes to take this opportunity to share with the conference a few examples of how these possibilities are in the becoming, and what the problems and difficulties are in the process of their making.

Speakers and Papers

Sr Prof Eddie HUI Chi Man
Professor of Real Estate, Department of Building and Real Estate,
The Hong Kong Polytechnic University

Sr Prof Hui is Professor of Real Estate at the Department of Building and Real Estate, the Hong Kong Polytechnic University.

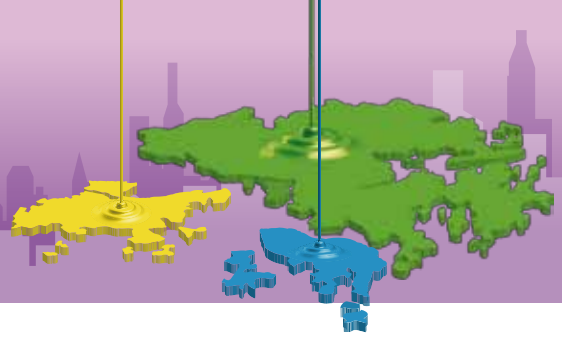
Sr Prof Hui graduated from the University of Hong Kong with first class honours, scholarly prizes and scholarships. With full Commonwealth scholarships, he completed his MPhil and Ph.D. at the Department of Land Economy, University of Cambridge, UK, where he is a fellow of the Cambridge Commonwealth Trust. Also, he was visiting professor at various universities and research centers locally and overseas on research and education: e.g. visiting fellow at Lincoln Institute of Land Policy in Cambridge, Mass. USA; and visiting scholar at Department of Land Economy, University of Cambridge, UK.

His expertise and principal research interests include land and construction economics and finance, urban and real estate economics. He is active and dedicated to research and consultancy with more than 200 scholarly outputs over the past few years. His research had been published in renowned international journals, such as Journal of Landscape and Urban Planning and Journal of Land Use Policy, International of Urban and Regional Research, Journal of Real Estate Finance and Economics, Urban Studies, Journal of Urban Affairs, Transportmetrica, International Real Estate Review, Real Estate Research, Housing Studies, Journal of Real Estate Portfolio Management, Journal of Real Estate Literature, Journal of Property Investment and Finance, Property Management, Construction Management and Economics, Journal of Urban Planning and Development, International Review of Economics and Finance, Journal of Housing and the Built Environment, Habitat International, Cities, Building and Environment, etc. Not only has he been member on editorial boards, but also as editor/guest editor for key international journals. He is currently HK director for Asian Real Estate Society and Global Chinese Real Estate Congress.

Urban Land Use...and...Housing Consumption? A Revisit

Authors: Prof. Eddie Chi-man HUI, Wadu Mesthrige JAYANTHA, and Ka-hung YU

Hong Kong is among the most densely-populated areas in the world. Its compact development is largely the end-result of a unique land use planning system, which consists of both zoning and planning control. These planning controls, in addition to limited land supply, result in low percentage of developed residential land and in low average housing space per person by international standards. In light of such development, this paper aims to examine Hong Kong's housing consumption and residential crowding over a time span of 25 years. For housing consumption, a two-step Engle-Granger co-integration approach based on an Error Correction Model is used to test for its long-run relation and short-run dynamics; while a multivariate regression model is deployed to analyze the impact of various factors on residential crowding. In both models, the institutional factor of land supply is emphasized. Policy implications are then to be discussed.



Introduction

Hong Kong is among the most densely-populated areas in the world. Almost 7 million people currently live in an area of 1107 km^2. The population density of Hong Kong is comparatively higher than that in other populous Asian cities, such as Seoul, Singapore, Taipei, and Tokyo (Hui & Lam, 2005). What makes the situation even worse than it seems is the concentration of people within urban areas. Kowloon Peninsula, in particular, has an astonishingly high population density of over 40,000 persons per square kilometer **(Table 1)**.

Districts	1996	2001	2006	2011
Hong Kong Island				
Central and Western	20,755	21,137	20,102	20,057
Wan Chai	17,235	16,986	15,788	15,477
Eastern	31,735	33,147	31,664	31,686
Southern	7,505	7,482	7,083	7,173
Sub-total	**16,511**	**16,775**	**15,915**	**15,924**
Kowloon				
Yau Tsim Mong	38,320	40,932	40,136	44,045
Sham Shui Po	38,237	37,772	39,095	40,690
Kowloon City	38,553	38,059	36,178	37,660
Wong Tai Sin	42,331	47,810	45,540	45,181
Kwun Tong	53,081	49,861	52,123	55,204
Sub-total	**42,661**	**43,201**	**43,033**	**44,917**
The New Territories				
Kwai Tsing	21,793	21,578	22,421	21,901
Tsuen Wan	4,502	4,566	4,679	4,918
Tuen Mun	5,663	5,919	6,057	5,882
Yuen Long	2,465	3,242	3,858	4,178
North	1,689	2,184	2,055	2,228
Tai Po	2,103	2,287	2,156	2,181
Sha Tin	8,468	9,157	8,842	9,173
Sai Kung	1,542	2,535	3,135	3,368
Islands	364	498	783	807
Sub-total	**3,076**	**3,526**	**3,748**	**3,870**
Overall	**5,796**	**6,237**	**6,352**	**6,544**

Table 1: Population density of various districts in Hong Kong (Source: Census & Statistics Department, 2012)

Hong Kong's compactness is generally believed to be the by-product of a unique land use planning system, which consists of both zoning and planning control. As for zoning, less than 7% of Hong Kong's total land is allocated for residential purposes **(Table 2)**. To make matters worse, the government, as owner of all the land in Hong Kong, releases non-developed land rather sparingly to ensure that the revenue from its sale is maximized (Hui et al., 2006). This practice results in higher base land price, which in turn leads to the clustering of developable land in the hands of only a few property developers. As for planning control, the development of residential buildings is constrained by means of maximum plot ratio, site coverage, and building height, etc. These controls have implications on the profitability of developable sites, and thus on developers' demand for residential land primarily through land sales or tender.

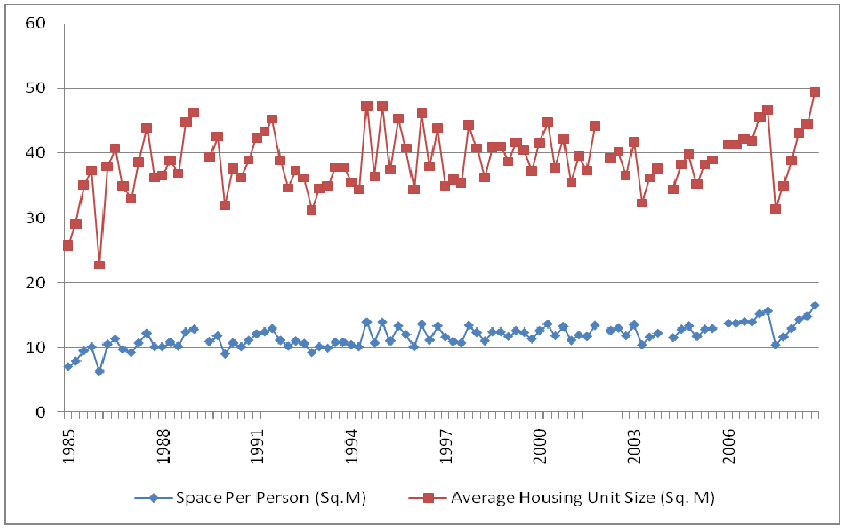
Class	Approximate area (sq. km)	Percentage (%)
Residential	76	6.86
Commercial	4	0.36
Industrial	26	2.35
Government, Institution and Community facilities	25	2.26
Transportation	56	5.05
Open Space	24	2.16
Other Urban or Built-up Land	52	4.69
Total Developed Built-Up Area	***263***	***23.74***
Agricultural	68	6.14
Woodland / Shrubland / Grassland / Wetland	740	66.79
Barren Land / Water Bodies	37	3.34
Total Non Built-Up Area	***845***	***76.26***
Total	**1108**	**100**

Table 2: Land use distributions in Hong Kong as in 2010 (Source: Planning Department)

Speakers and Papers

These land use controls, in addition to limited land supply, play crucial roles in affecting housing consumption and residential crowding. It is found that the average floor-space per person SPP in Hong Kong, hovering between 10 and 20 m^2 over the years **(Figure 1)**, is much smaller than that in developed countries and even in some former communist nations in Europe **(Table 3)**. In fact, for a developed city, Hong Kong's SPP has only been on par with the United Nations' recommended level (at 13.2 m^2). Under such circumstances, residential overcrowding seems to be a norm rather than the exception. The average size of housing units is also very small with an average of 30-50 m^2 **(Figure 1)** and a large proportion of which are old and aging rapidly. To make matters worse, several households sharing one small residential unit is prevalent in the private housing sector (Ho and Wong, 2009).

Figure 1: Average Housing Unit Size and Average Space per Person (SPP)



Note: Usable floor area has been considered
Source: Compiled from *Monthly Statistics (various issues)*, Buildings Department; and *Monthly Digest of Statistics*, Census and Statistics Department

Nation	Year	Average Floor Area Per Person (in m^2)
Austria	2009	42.9
Bulgaria	2008	25.2
Czech Republic	2001	28.7
Denmark	2009	51.4
Estonia	2009	29.7
Finland	2009	38.9
France	2006	48.4
Germany	2008	45.5
Greece	2001	30.6
Hungary	2005	31.2
Ireland	2002	35.0
Italy	2001	36.5
Latvia	2008	27.0
Lithuania	2008	24.9
Luxembourg	2008	66.3
Malta	2002	34.3
Netherlands	2000	41.0
Poland	2008	24.2
Romania	2008	15.0
Slovak Republic	2001	26.0
Slovenia	2004	30.9
Spain	2008	33.0
Sweden	2008	45.2
United Kingdom	2009	40.8
The United States	2009	65.5
Japan	2008	37.3
Korea	2000	20.2

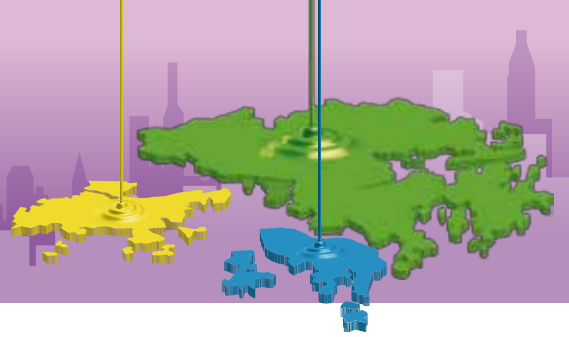


Table 3: International Comparison of Average Residential Floor Area Per Person (SPP)
Sources: Korea: Chul Koh, "Overview of Housing Policies & Programs in Korea, Oct 18, 2004"; Japan: Mitsui Fudosan, "Japanese Real Estate Statistics 2012"; Statistics Bureau, Ministry of Internal Affairs and Communications, "Housing and Land Survey 2008"; The United States: Census Bureau, "American Housing Survey for the United States 2009"; The United Kingdom: DCLG, "English Housing Survey Housing Stock Summary Statistics 2009" and "English Housing Survey 2009-10 Household Report"; France: INSEE, "Enquêtes Nationales Logement 2006"; Germany: Bundesminister für Verkehr, Bau und Stadtentwicklung "Wohnen und Bauen in Zahlen 2009/2010";; The European Union: The Hague: Ministry of the Interior and Kingdom Relations, "Housing Statistics in the European Union 2010"

This gives an indication of housing consumption and residential crowding in Hong Kong. As high density dwelling units with high ground densities in Hong Kong is an extremely serious problem, this issue warrants serious attention for the government, society and academics. The present study aims to evaluate levels of housing consumption and residential crowding; and to explore significant determinants of housing consumption and residential crowding in Hong Kong, and suggest an explanation for their underlying dynamics.

Method & Data

In this study, it is postulated that housing consumption and crowding can be explained by three sets of factors, namely, market factors, demographic factors, and institutional factors.

(1) Market factors include:
- Housing prices
- Housing rents
- Household income
- Mortgage interest rate
- Unemployment rate
- Housing stock;

(2) Demographic factors include:
- Household size
- Population growth
- Growth of total number of households
- Homeownership rate; and

(3) Institutional factors include:
- Ratio of land supply (that is, the ratio of total land supply in inner urban areas to total land supply in outer urban areas)
- Dummy variable depicting the location of land supplied

The basic model could be specified as:

$$HCC_t = \pi + \mu\,(MFact_t) + \beta\,(HHCha_t) + \psi\,(InFact_t) + u_t \quad (1);$$

where HCC represents housing consumption and crowding during time period t, MFact, HHCha and InFact represent market factors, demographic factors, and institutional factors, respectively. π denotes the intercept term while μ, β and ψ represent corresponding regression coefficients.

A co-integration time-series framework based on an Error Correction Model (ECM), which constitutes all the possible factors (market, household and institutional) that influence housing consumption and crowding, is introduced in order to identify long-run relationships as well as short-run dynamics of different factors in housing consumption. Co-integration analysis provides a technique to establish long-term and short-term dynamics in non-stationary series processes, which are found to be in the same order.

While the two-step Engle-Granger co-integration approach is used to test for long-run relation and short-run dynamics of housing consumption, the study also uses a multivariate regression model to analyze the factors affecting residential crowding. The co-integration approach may not be very much appropriate for dummy variables. Of particular interest in the study, we attempt to analyze the effects of location of land supply on residential crowding. On the other hand, the space stress indicator (the dependent variable), which is the deviation from the mean value of space per person, itself, may not be appropriate to analyze using a co-integration method. Therefore, a multivariate regression model is also used in the study to supplement the results obtained from the co-integration approach.

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The study employs quarterly data from 1985:1 to 2008:4. It should be noted that housing consumption in the study are measured by the amount of living space occupied by a household *AHU* (m^2) and the amount of space per person *SPP* (m^2), whilst residential crowding (under- and over-consumption) is measured by a space stress indicator *(STRESS)*.

Findings

Basic Statistics

- The median housing consumption (average housing unit size) is around 39 m^2 (420 ft^2) per household
- The average SPP is about 12 m^2 (129 ft^2), which is less than the UN's recommended SPP level.
- The median space (per person) stress is -0.09, indicating that, on average, households in Hong Kong have inadequate living space and suffer residential stress **(Figure 2)**.

Demographic Factors

- Housing consumption in Hong Kong is influenced significantly by demographic factors in the long-run, especially household size.
- Yet, larger households, in particular in the low-income group, are forced to share smaller units, with a smaller floor area per person.
- In terms of tenure, housing consumption improves and crowding alleviates over time as the proportion of owner-occupiers increases.

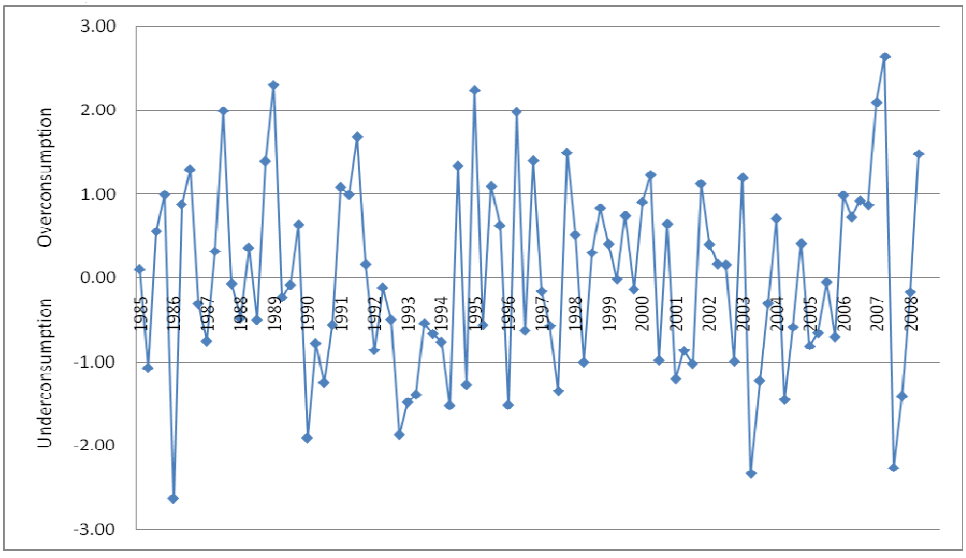
Market Factors

- Households with higher income seem to have a significant effect on housing consumption in the long-run as they are in a better position to afford units with larger living space.
- High housing prices in Hong Kong push people to live in smaller units, hence with a small floor area per person. Thus, they are very likely to suffer residential stress.

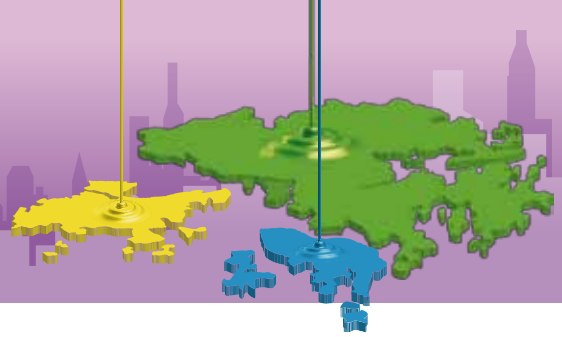
Institutional Factors

- Land supply, in particular the location of it, significantly affects housing consumption and residential crowding.
- After the mid 1990s, land supply was mainly concentrated in the inner city areas, especially with reclaimed lands, which is understandably expensive. Thus, housing consumption was affected severely.

Figure 2: Distribution of Over-consumption and Under-consumption (actual SPP- required SPP)



Notes: Underconsumption or overconsumption is defined as the difference between the theoretical space demanded and the actual amount of floor space per person.



Conclusion and Policy Implications

- Using a time-series data set of 25 years, the objective of the paper is to explore significant determinants of housing consumption and residential crowding in Hong Kong, and suggest an explanation for the underlying dynamics.
- This study adds knowledge to previous works as it gives an overall picture on how various determinants have influenced space consumption and crowding over the years rather than in a particular point in time. Also, it is the first of its kind in Hong Kong.
- We found that housing consumption and crowding are affected not only by market factors and demographic factors, but also by institutional factors, which are quite unexpected in a market economy like Hong Kong. Rather surprisingly, the influence of institutional factors on housing consumption is found to be significant, largely because the government continues to intervene in the land and housing markets.
- Our results show that land supply policy has adversely affected housing consumption. Supply of land has been clustered in inner city areas rather than in abundant non-built up land in outer urban areas, which constitutes approximately 77% of the total land mass in Hong Kong.
- The government's land policy has been based on the 'high land price' policy in that it favours increasing land supply through massive reclamation rather than through comprehensive developments in outer urban areas such as the New Territories.
- This study proffers some implications for policy changes in land provision in ways such as: (1) the existing poor living conditions demand a more active and sensible role by the government to resolve the issue of residential crowding and undesirable housing consumption; (2) the government should re-consider or even abandon its high land price policy for a high profit; (3) the government should relax its restrictive land supply policy by making use of the abundant non-built up land in Hong Kong if we are to achieve the objective of affordable housing and a better living environment for low and middle income people; and (4) one of the major options available to address residential crowding issue is to strategically plan and move people to outer urban areas, such as the New Territories and some other places where there are still lots of unutilized lands available.

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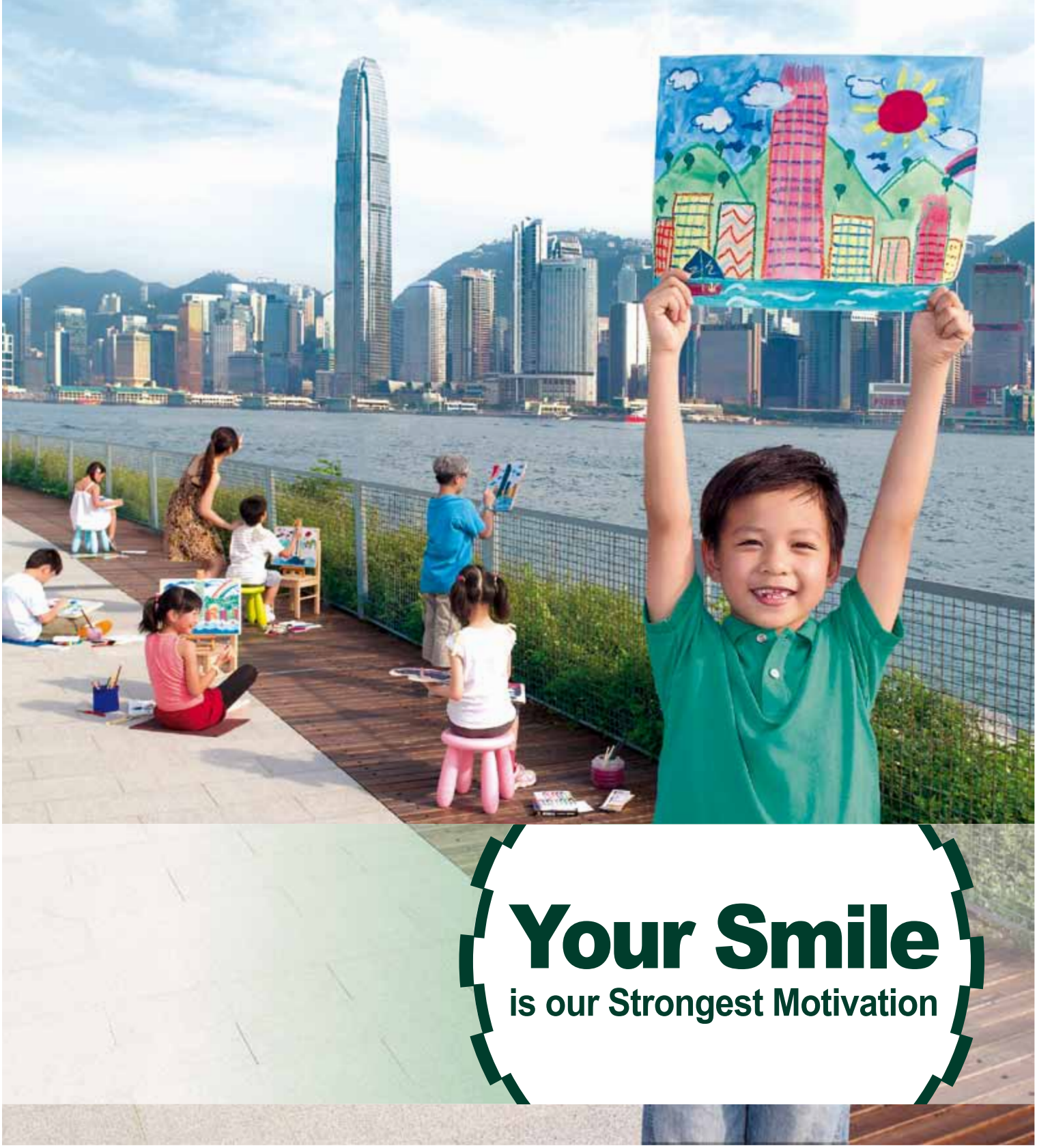

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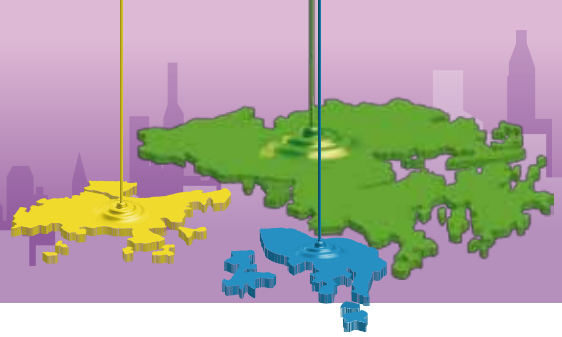
Introduction of HKIS



The history of the surveying profession in Hong Kong goes back to 1843 with the arrival of the first Surveyor General from the United Kingdom. The first Government Land Auction then took place on 22 January 1844. Until the 1950s, most surveyors in Hong Kong were recruited from overseas, these surveyors being qualified chartered surveyors. Local educational institutes started diploma courses in surveying in the 1960s, and now there are three universities in Hong Kong offering degree courses in surveying.

The Hong Kong Institute of Surveyors (HKIS) has strong links with the Royal Institution of Chartered Surveyors (RICS). A Hong Kong Branch of the RICS (the Branch) has been in existence since 1929 (then known as The Surveyors Institution Hong Kong Branch). In 1978, the Branch set up a working group to examine the possibility of establishing a local institute of surveyors and the conclusion was positive. The Branch was only dissolved on 31 August 1997.

The HKIS was founded in 1984 and registered under the Societies Ordinance. It had 85 founder members, the number of members has now grown to around 5,581 as at 31 August 2012 – Members and Fellows - distinguished by the initials MHKIS and FHKIS. The HKIS is now incorporated by ordinance, with the passing of the Hong Kong Institute of Surveyors Ordinance in January 1990. In July 1991, there was also passed the Surveyors Registration Ordinance to set up a Registration Board to administer the registration of surveyors.

To qualify as a corporate member of the HKIS, surveyors must possess a recognised academic degree or similar qualification, followed by a minimum 2 years supervised professional experience within strict guidelines, followed by an Assessment of Professional Competence. HKIS members are also bound by a comprehensive Rules of Conduct.

The title of "Surveyor" embraces a number of disciplines involved with land and its development with buildings. Usually the first to be involved is the ***Land Surveyor*** who measures and sets out the site. Next follows the ***Quantity Surveyor*** who is concerned with the building contractual arrangements and cost control. The ***General Practice Surveyor*** is involved in the valuation, sale, leasing and management of the finished product. ***Planning and Development Surveyor*** advises on the possible change of zoning likely environmental impacts and make suggestion on preliminary development contents, while the ***Building Surveyor*** is involved in the construction and maintenance of the fabric of the building. The ***Property and Facility Management Surveyor*** plans, organises and manages accommodation services, supplies and other facilities relating to building occupancy.

The HKIS has entered into reciprocity agreements with the following overseas surveying institutes:

- The Royal Institution of Chartered Surveyors
- The Australian Property Institute
- The New Zealand Property Institute
- The Singapore Institute of Surveyors and Valuers
- China Institute of Real Estate Appraisers
- China Engineering Cost Association
- China Association of Engineering Consultants
- The Australian Institute of Quantity Surveyors
- New Zealand Institute of Quantity Surveyors
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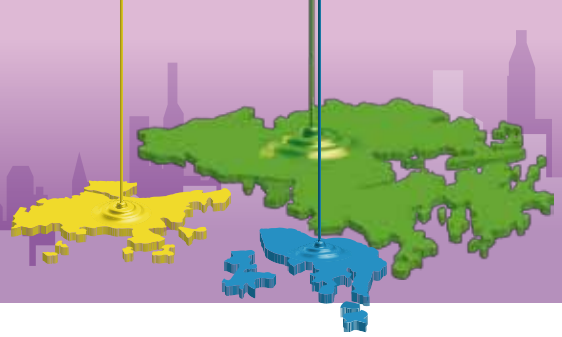

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