Hong Kong 2030+: Towards A Planning Vision and Strategy Transcending 2030

Conceptual Spatial Framework

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November 2016

Table of Contents

List of Figures and Tables

PREFACE

The conceptual spatial framework under Hong Kong 2030+ is intended to guide Hong Kong's planning, land and infrastructure development. In order to conserve our natural assets, the framework concentrates development at **one metropolitan business core**, **two strategic growth areas**, and **three primary development axes**. Supported by a conceptual transport network, it will help realise the three building blocks proposed under Hong Kong 2030+, i.e. planning for a liveable high-density city, embracing new economic challenges and opportunities, and creating capacity for sustainable growth[1].

In the long term, the following benefits are anticipated from the proposed framework:

(a) conserving natural assets;
(b) meeting the estimated land requirements for housing, social and economic developments;
(c) improving spatial distribution of population and employment and bringing jobs closer to home;
(d) providing space with buffer for improving liveability, including enhanced home space, community facilities and open space;
(e) rejuvenating and improving the old urban fabric with more greening and open spaces;
(f) enhancing physical and functional connectivity with lesser commuting needs; and
(g) enhancing transport network to relieve congestion of key transport corridors.

This topical paper constitutes part of the research series under "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" (Hong Kong 2030+). The findings and proposals of the paper form the basis of the draft updated territorial development strategy which is set out in the Public Engagement Booklet of Hong Kong 2030+.

[1] Details of the three building blocks can be found in the public engagement booklet and pamphlet.

GUIDING PRINCIPLES AND FACTORS FROM BUILDING BLOCKS

1. The formulation of the conceptual spatial framework has taken into account a series of principles and factors pertinent to the three building blocks proposed under Hong Kong 2030+. The major ones are elaborated below.

Conserve areas of high ecological and conservation values and pay due regard to environmentally sensitive areas, concentrate development along axes and at nodes, and avoid urban sprawl

2. With due regard to the strategic directions (i) to create, enhance and regenerate environmental capacity under the building block of creating capacity for sustainable growth, and (ii) to leverage our green and blue assets[2] for enhancing their recreational, ecological and amenity potentials and providing a resilient landscape under the building block of planning for a liveable high-density city, the conceptual spatial framework should avoid development encroaching into ecologically sensitive areas and green and blue assets of conservation importance. Besides, to avoid future urban sprawl affecting the environmentally sensitive areas, long term new development should be concentrated within the proposed nodes and along the proposed axes.

[2] Green and blue assets in Hong Kong include country parks, public parks, Victoria Harbour, beaches, rivers, streams, wetland, reservoirs, etc.

Promote the agglomeration of economies, create the necessary critical mass and facilitate the build-up of business ecosystems that will enhance efficiency, business viability, economic performance and collaboration

3. Under the building block of creating capacity for sustainable growth, there is a strong case for (i) sizable strategic growth areas (SGAs) for holistic planning, and economies of scale in land and infrastructure development, and (ii) a smart, green and resilient (SGR) strategy with focuses on minimising demand and use of resources, promoting low-carbon smart economy and living, reducing carbon emissions, enhancing city efficiency, promoting business productivity and improving quality of urban living. As such, our direction should be to plan with a more visionary approach to capitalise on the development potential and the agglomeration of economies to create the necessary critical mass and the build-up of an economic ecosystem that will enhance business efficiency/viability and economic performance. In doing so, the conceptual spatial framework should leverage the strategic locations and new development opportunities to be brought by the new transport infrastructure and boundary control points (BCPs) (such as Hong Kong International Airport (HKIA) Three-Runway System, Hong Kong-Zhuhai-Macao Bridge (HZMB), Tuen Mun-Chek Lap Kok Link (TM-CLKL), Guangzhou-Shenzhen-Hong Kong Express Railway Link (XRL) and Liantang/Heung Yuen Wai Boundary Control Point (LT/HYW BCP)). Also, clustering of industries at highly accessible strategic locations (particularly within

the strategic growth areas and along the axes under the conceptual framework) should be pursued with a view to creating synergy and facilitating mutual growth of different economic uses, with labour supply from nearby communities.

Enhance the spatial distribution of population and jobs

4. Based on the key strategic directions and actions (i) to provide more land to cater for the requirements under the building block of embracing new economic challenges and opportunities, and (ii) to reshape travel pattern by designating more employment-related land uses in new development areas (NDAs) outside the traditional central business district (CBD) area under the building block of creating capacity for sustainable growth, it is considered that the conceptual spatial framework should enhance our spatial distribution, particularly that of economic activities and employment opportunities.

Enhance liveability

5. The building block of planning for a liveable high-density city suggests a number of key strategic directions and actions to enhance liveability, some of which have implications on the conceptual spatial framework:

   (a) managing density through retrofitting/redeveloping the congested old urban areas and achieving an optimal density in NDAs;

   (b) underscoring transit-oriented and compact development with railway as the backbone of public transport system;

   (c) promoting physical and function integration between activity nodes and better accessibility to facilities; and

   (d) promoting urban-rural-countryside-nature continuum and enriching green and blue assets to bring nature closer to homes.

Provide development capacity to meet foreseeable needs and unforeseeable circumstances

6. The conceptual spatial framework will provide adequate land supply to meet the projected demand for housing, economic, government, institution and community, open space and transport facilities, etc. and to provide a reasonable buffer as manoeuvring space for improving quality of living (such as larger home space, more public amenities and more community facilities) and coping with unforeseeable circumstances (including changes in various projection assumptions which would affect their estimated land requirements). Under the building block of embracing new economic challenges and opportunities, adequate land reserve should also be created so as to increase our economic capacity and resilience.

PROPOSED SPATIAL DEVELOPMENT PATTERN AND SUPPORTING TRANSPORT NETWORK

7. The proposed spatial development pattern comprises three key elements as shown in **Figure 1**:

   (a) **Metropolitan Business Core** with agglomeration of business activities to create a major economic hub at the urban core;

   (b) **Western Economic Corridor** as international and regional gateway supported by strategic transport infrastructure;

   (c) **Eastern Knowledge and Technology Corridor** with development of tech-ecosystem for high technology and knowledge based industries; and

   (d) **Northern Economic Belt** with potential for warehousing, research and development (R&D) and modern logistics capitalising on the strategic boundary location with control points.

8. More details of each of the element are presented in **Figure 1** for easy reference.

9. Subject to further study, the proposed spatial development pattern would be supported by transport network with three main corridors as shown in **Figure 2**:

   (a) **Northwest New Territories (NWNT)-Lantau-Metro Transport Corridor** which is adapted from the Strategic Traffic and Transport Infrastructure Concept proposed by the Lantau Development Advisory Committee[3];

   (b) **North-South Transport Corridor**; and

   (c) **Extended North-South Transport Corridor** for bridging the two corridors mentioned in (a) and (b) above.

[3] Strategic Traffic and Transport Infrastructure Concept proposed by the Lantau Development Advisory Committee is shown in Figure 5 below for reference.

Figure 1 Proposed Spatial Development Pattern

Metropolitan Business Core
- Agglomeration of business activities to create a major hub at the urban core
- Central CBD and Kowloon East CBD2 in the existing Metro Area
- West Kowloon – synergy with the Central CBD and the high connectivity to the Mainland through the Guangzhou-Shenzhen-Hong Kong Express Rail Link
- North Point/Quarry Bay – secondary office node
- Wong Chuk Hang – emerging office and business node
- East Lantau Metropolis (ELM) – CBD3, a new and smart platform for office and business development

Western Economic Corridor
- International and regional gateway supported by strategic transport infrastructure
- Hong Kong International Airport with the Three-runway System and North Commercial District
- Hong Kong-Zhuhai-Macao Bridge (HZMB) with topside commercial development at the Hong Kong Boundary Crossing Facilities (HKBCF) Island
- Tung Chung New Town Extension – new business/commercial hub
- Logistics developments in Tuen Mun West
- Planned commercial/modern logistics developments in Hung Shui Kiu NDA

Eastern Knowledge and Technology Corridor
- Development of a tech-ecosystem for high-technology and knowledge-based industries
- Existing science park in Tai Po and possible R&D and higher education facilities at Ma Liu Shui development
- Two existing industrial estates at Tseung Kwan O and Tai Po
- Six existing universities – PolyU at Hung Hom, CityU and HKBU at Kowloon Tong, CUHK at Sha Tin, EdUHK at Tai Po and HKUST at Clear Water Bay
- Industrial and service support facilities at Kowloon Tong – InnoCentre and Hong Kong Productivity Council
- the Loop and Kwu Tung North NDA for development of R&D institutes/facilities
- Possible science park/industrial estate development near future Liantang/Heung Yuen Wai Boundary Control Point (LT/HYW BCP) within the New Territories North (NTN)

Northern Economic Belt
- Potential for warehousing, R&D and modern logistics capitalising on the strategic location for being in close proximity to Shenzhen
- Six existing boundary crossings at the Shenzhen Bay Port, the Lok Ma Chau Station, Lok Ma Chau, Man Kam To, Sha Tau Kok and Lo Wu, and LT/HYW under construction
- Existing industrial estate at Yuen Long
- Possible developments in the NTN including commercial/retail facilities in San Tin/Lok Ma Chau, modern logistics development at Man Kam To and possible science park/industrial estate development near the future LT/HYW BCP

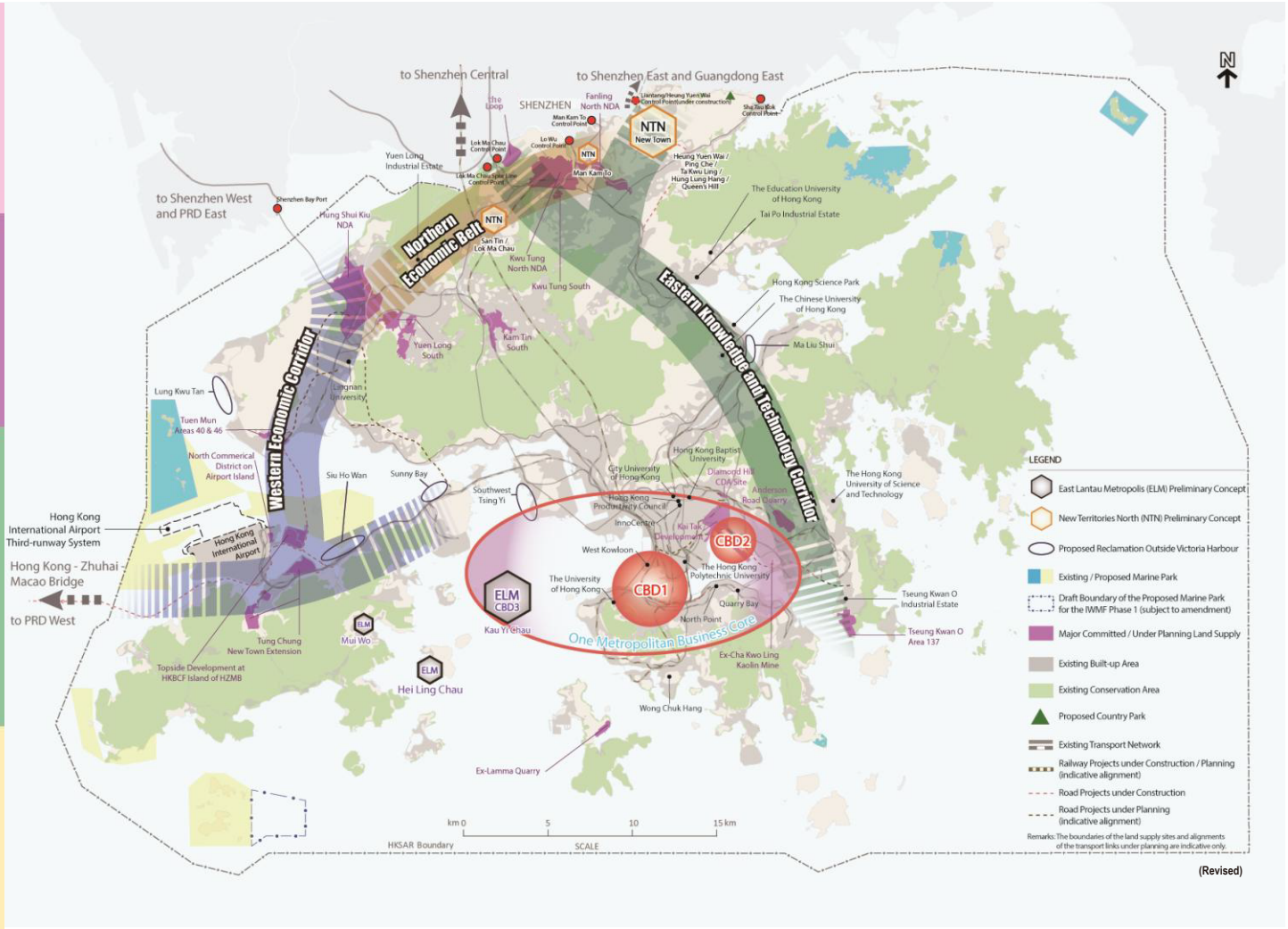
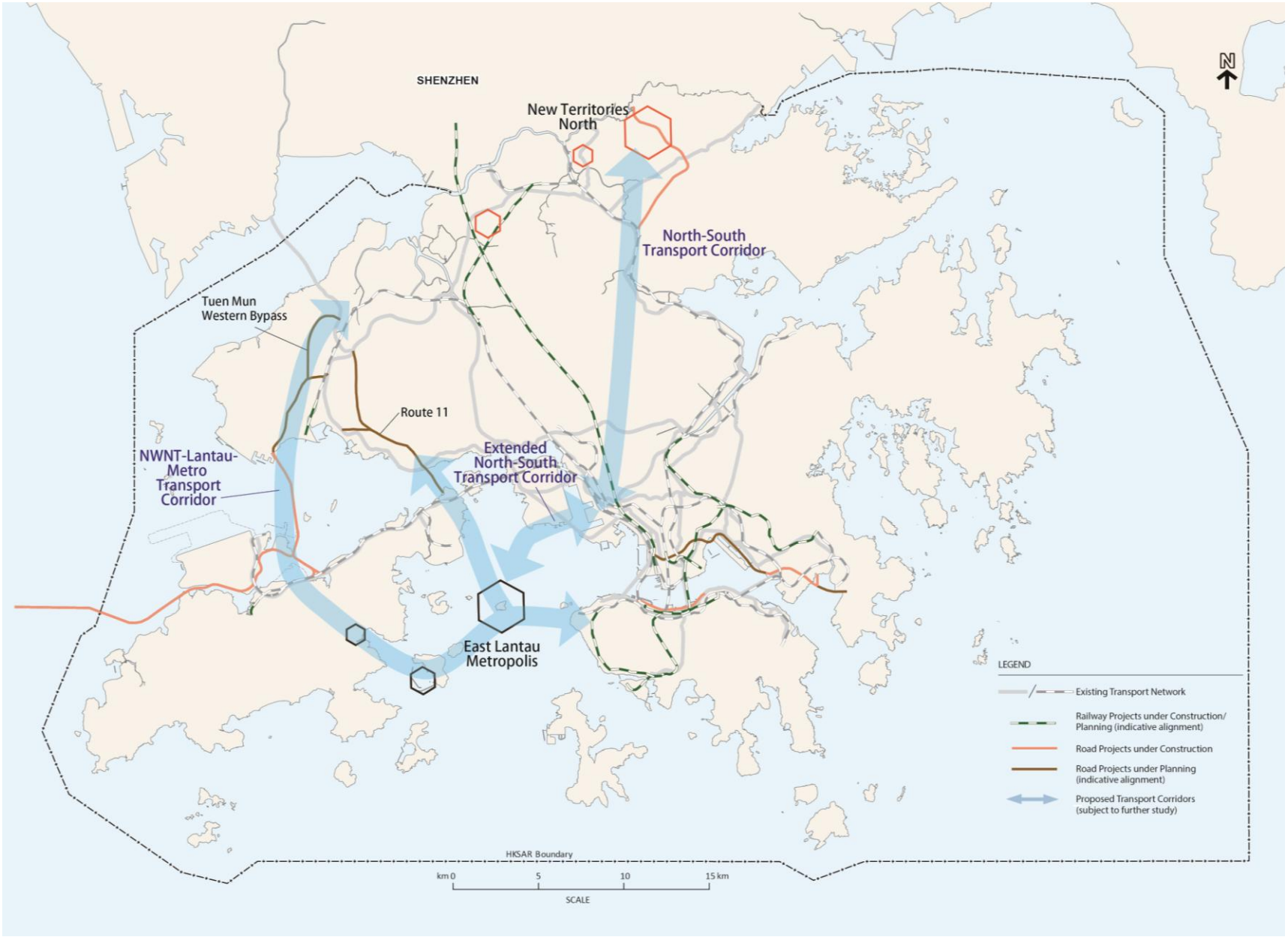


Figure 2 Proposed Supporting Transport Network for Spatial Development Pattern



PROPOSED CONCEPTUAL SPATIAL FRAMEWORK FOR HONG KONG 2030+

10. We are prudent in optimising the locational advantages for different sectors/industries, the distribution of population and jobs, and the capacity of transport, infrastructure and environment for an environmentally-conscious, efficient and cost-effective development pattern. A clear spatial framework focusing on future development with one metropolitan business core, two SGAs (namely East Lantau Metropolis (ELM) and New Territories North (NTN)) and three primary development axes is proposed (**Figure 3**) so that our natural assets could be duly conserved.

Metropolitan Business Core

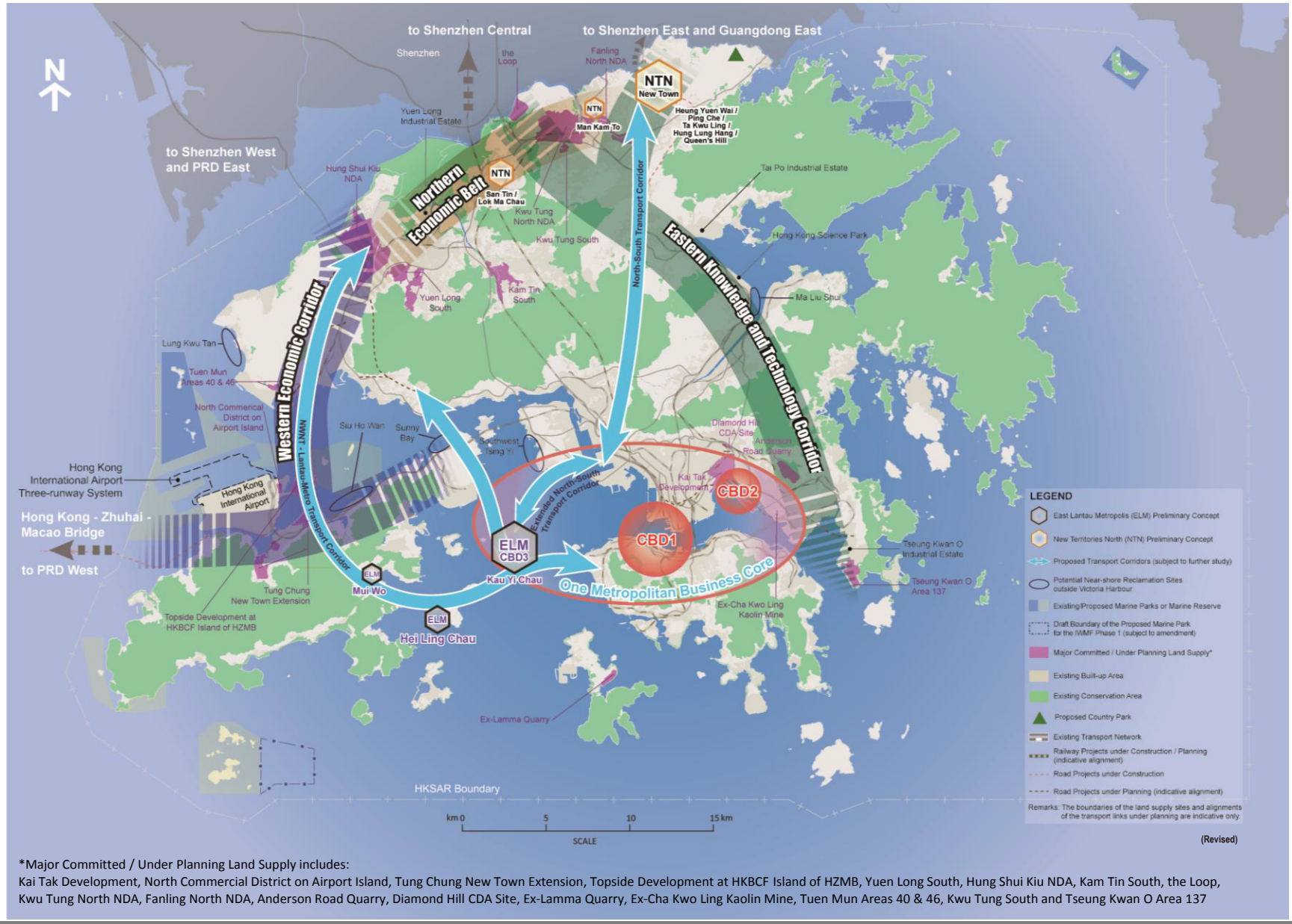
11. The Metropolitan Business Core will cover the traditional CBD, Kowloon East (namely CBD2) and CBD3 at ELM. Subject to the provision of new strategic transport links to the main urban areas and other parts of the territory, ELM would be developed as CBD3 and an extended urban core near Hong Kong Island for providing long term solution space for housing and economic development.

12. The traditional CBD has limited space to further expand. Being only about 4 km away from Hong Kong Island West, ELM could efficiently connect with the existing CBD core, hence reinforcing the existing business core around the Victoria Harbour as well as creating a new metro front in the territory.

13. Functionally, the three CBDs could complement one another. The traditional CBD could focus on high value-added financial services and advanced producer services. CBD2 may provide options for businesses and enterprises at a new business area under transformation. The proposed CBD3 may offer modern, innovative and quality premises, creating a financial and producer services hub strongly tied to the HKIA and Hong Kong's connector function in the region, capitalising on the new economic infrastructure and gateway function of Lantau[4]. The planning intention for developing CBD2 in Kowloon East and CBD3 in ELM is to provide more economic and employment generation land uses away from the urban core with a view to redressing the current imbalance in distribution of jobs across the territory.

[4] Possible new economic infrastructure on Lantau include (i) North Commercial District on Airport Island, (ii) Topside Development at Hong Kong Boundary Crossing Facilities Island of HZMB, (iii) Tung Chung New Town Extension, (iv) Sunny Bay reclamation, (v) HKIA Three-Runway System, (vi) future expansion of Asia World-Expo, and (vii) other major tourism and recreation facilities.

Figure 3 Proposed Conceptual Spatial Framework for Hong Kong 2030+



*Major Committed / Under Planning Land Supply includes:
Kai Tak Development, North Commercial District on Airport Island, Tung Chung New Town Extension, Topside Development at HKBCF Island of HZMB, Yuen Long South, Hung Shui Kiu NDA, Kam Tin South, the Loop, Kwu Tung North NDA, Fanling North NDA, Anderson Road Quarry, Diamond Hill CDA Site, Ex-Lamma Quarry, Ex-Cha Kwo Ling Kaolin Mine, Tuen Mun Areas 40 & 46, Kwu Tung South and Tseung Kwan O Area 137

Strategic Growth Area 1 – East Lantau Metropolis

14. The 2014 Policy Address announced an initiative to explore ways to further develop the eastern waters of Lantau Island and neighbouring areas, with a view to developing an ELM for accommodating new population and a CBD in addition to Central and Kowloon East for promoting economic development and providing job opportunities in Hong Kong.

15. ELM will be situated mid-way between Hong Kong Island and the main island of Lantau. The basic concept of the ELM is to create artificial island(s) through reclamation in the waters near Kau Yi Chau (KYC) and Hei Ling Chau (HLC) Typhoon Shelter as well as making better use of the underutilised land in Mui Wo (MW), with the aim of creating a smart, liveable, low-carbon development cluster including CBD3.

16. ELM is positioned as a potential long-term strategic growth area. It would help support Hong Kong's overall population and economic growth, and achieve a more balanced spatial development pattern for the territory through provision of sizeable land for housing and economic uses, and would generate ample employment opportunities. The ELM and its supporting transport infrastructure will facilitate the formation of a strategic transport link to enhance the connectivity between Hong Kong Island and Lantau, particularly the HKIA and Hong Kong Boundary Crossing Facilities (HKBCF) of HZMB.

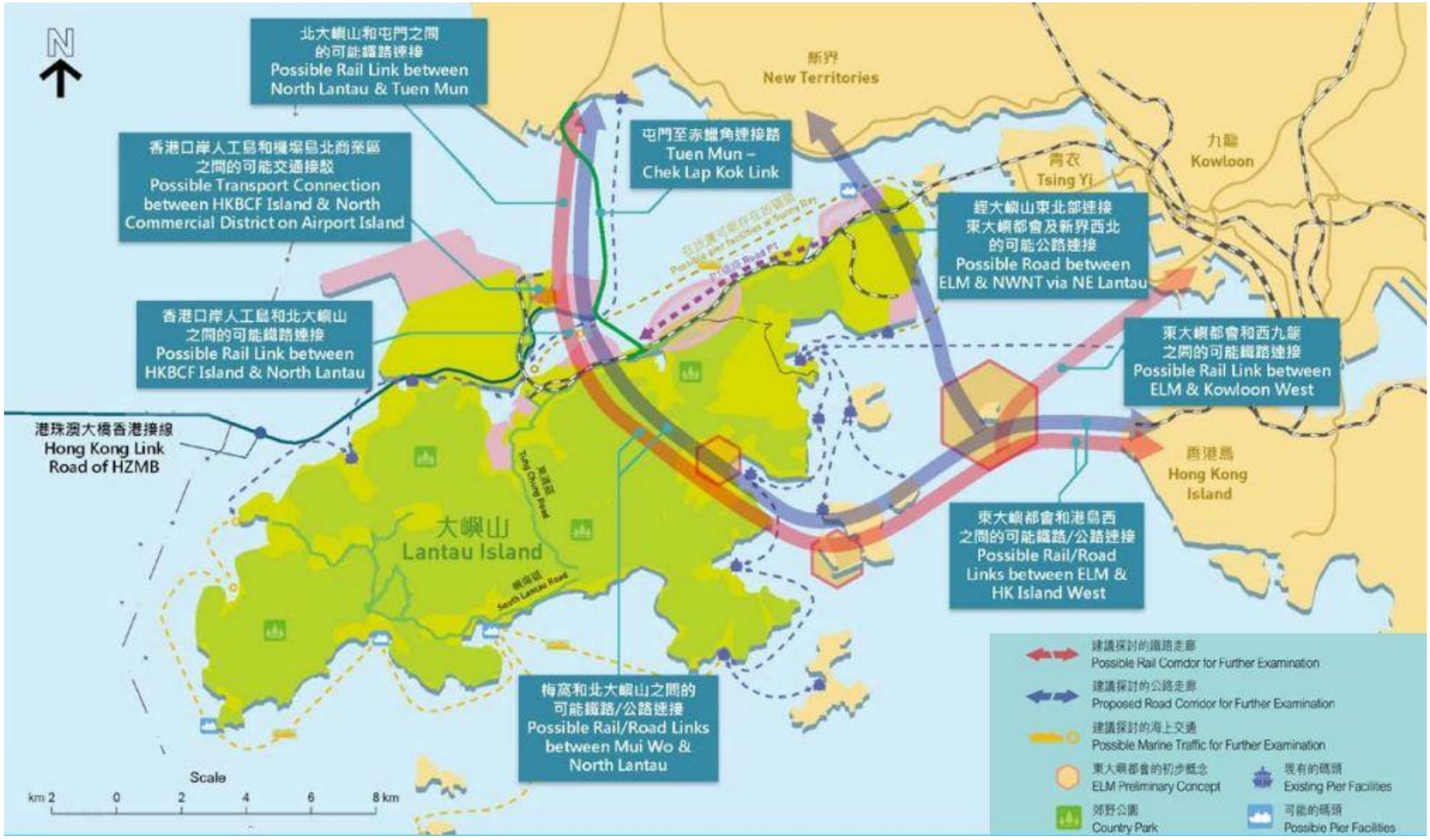
17. The overall planning approach for ELM comprises six major components, including:

(a) creating economies of scale for better planning and design;
(b) forming a new CBD;
(c) embracing natural features;
(d) fostering urban-rural-nature integration;
(e) enhancing accessibility and connectivity; and
(f) adopting the concept of SGR city.

18. Having regard to the above planning approach as well as other relevant considerations, the potential developable area of the ELM is about 1,000 ha and the population could range from 400,000 to 700,000 supported by at least about 200,000 employment opportunities. The ELM could potentially consist of three development areas, namely KYC, HLC and MW. The three components will be planned comprehensively to achieve synergy, economies of scale, connectivity and optimisation of land uses and functions (**Figures 4 and 5**):

Figure 4 East Lantau Metropolis

Figure 5 Strategic Traffic and Transport Infrastructure Concept Plan Adapted from Lantau Development Advisory Committee's First-term Work Report – "Space for All" (For Indication Only)



(a) Kau Yi Chau

KYC is positioned as a core development of the ELM with CBD3. Large-scale reclamation is proposed to create sizeable flat land to achieve critical mass. It is targeted to be developed as a new development area to accommodate a large proportion of the new population of the ELM and contribute to the economic development and employment generation of Hong Kong. A new CBD comprising office, hotel and other commercial developments will be provided as an alternative locational choice other than the traditional CBD. It would contribute to a more balanced distribution of employment in Hong Kong.

In view of the sensitive natural setting of KYC, development should not infringe on the existing island in order to protect the existing habitats. In this regard, innovative measures, such as water channels around the island, should be examined. Moreover, the eco-shoreline concept could be applied to the artificial island(s) to minimise the impact on the marine ecology.

(b) Hei Ling Chau

HLC is positioned as a residential township. The scale of the township would depend on the critical mass that allows it to support itself for urban island living. The future residents would be benefitted from the employment opportunities in KYC which is to be developed with a CBD. Sizeable flat land could be created through reclamation of the currently underutilised HLC Typhoon Shelter and its surrounding waters. Development on the island would be confined to the sites of the existing correctional and related facilities, which would need to be relocated to suitable areas to be identified, to ensure secured and smooth operation in accordance with the relevant legislation. Such development would also need to avoid disturbance to the habitat of the rare Bogadek's Burrowing Lizard, and should be subject to ecological survey.

(c) Mui Wo

The concept for MW is the development of a sustainable and quality residential neighbourhood respecting the rural and natural setting by making better use of the underutilised land. Through re-planning and optimisation of existing underutilised land, together with cavern development, MW could be revitalised as an enhanced township with a small amount of low-density residential developments as well as recreational and tourism-related uses. The areas around the existing ferry pier could become an activity hub with water promenade, retail shops, restaurants, alfresco dining, civic and leisure facilities for the enjoyment of local residents, visitors and tourists. The area further north along Silver Mine Bay Beach could be enhanced and upgraded to become a beachfront recreational node for eco-tourism and water sports development. Ecologically-sensitive areas such as Fung Shui woodlands and natural streams should be preserved.

Strategic Growth Area 2 – New Territories North

19. Through comprehensive planning and more efficient use of those abandoned agricultural and brownfield land in the New Territories, the development of the NTN would be a significant source of land supply for building up new communities and developing modern industries and industries preferring a boundary location[5] while improving the living environment of the existing area.

20. The Planning Department and the Civil Engineering and Development Department jointly commissioned the "Preliminary Study on Developing the NTN" (NTN Study) in early 2014, with the aims to (i) formulate a broad planning framework for the NTN through optimising the use of land released from the Closed Areas and other undeveloped areas in the region, (ii) conserve the natural and cultural heritage, (iii) capture opportunities that may be brought by new transport infrastructures under planning, and (iv) tackle various environmental issues in the area caused by the proliferation of brownfield sites and the associated problem of inefficient use of scarce land resources. The Fanling Golf Course held under the Private Recreational Lease (PRL) falls within the NTN

[5] NTN commands a strategic boundary location. It has easy access to Shenzhen and the eastern part of Guangdong. The existing boundary control points, namely Lo Wu, Man Kam To, Lok Ma Chau and Lok Ma Chau Spur Line, handle a large volume of cross-boundary traffic which is expected to grow. The LT/HYW BCP together with the Link Road, both under construction, will enhance connection between Hong Kong, Shenzhen east and the eastern part of Guangdong.

study area and is subject to the Review of the Policy on PRL currently undertaken by the Home Affairs Bureau. The NTN Study Area is shown in **Figure 6**.

Figure 6 NTN Study Area

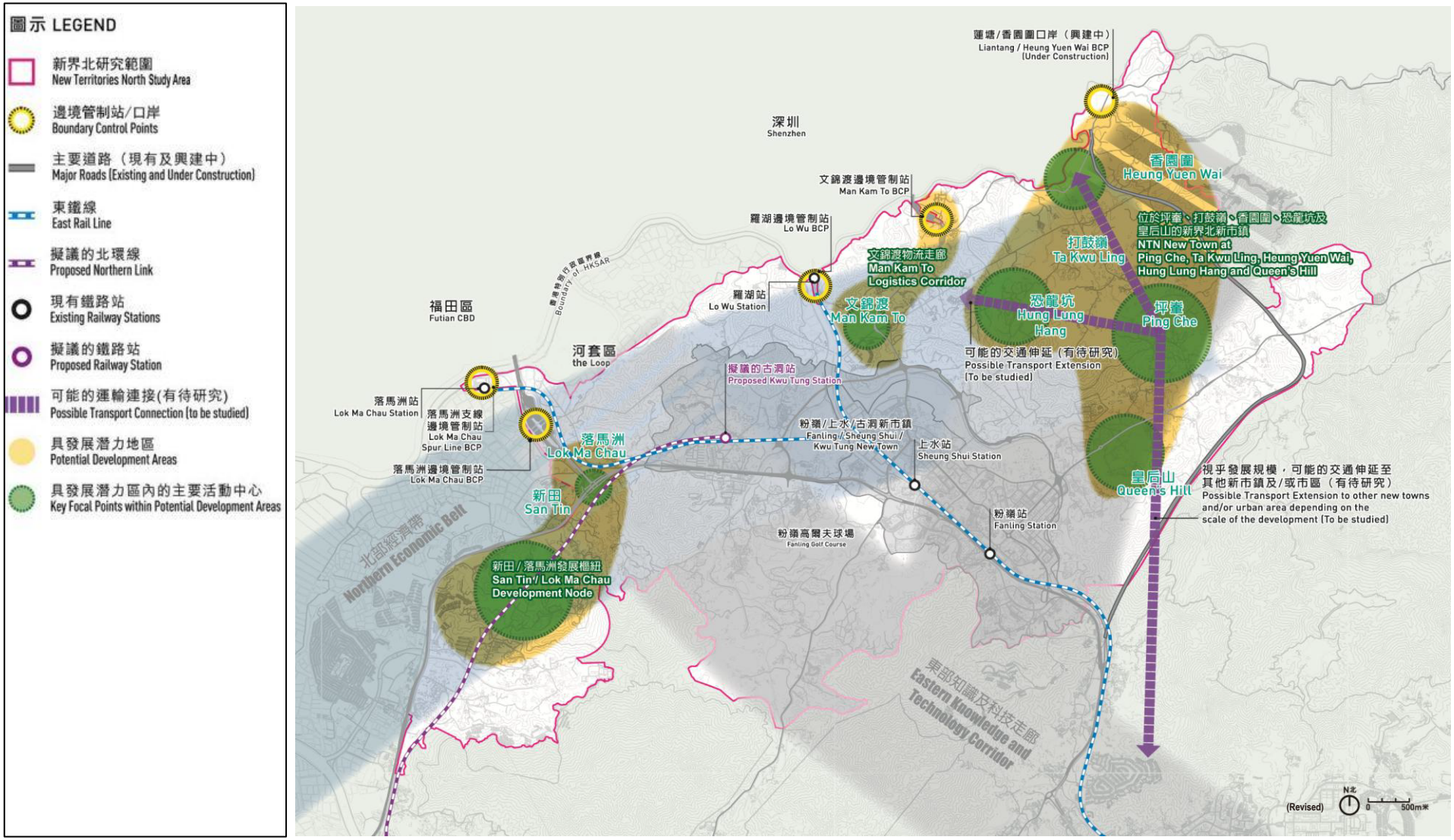
21. The following four components are proposed in the overall planning approach in the NTN Study:

    (a) fostering urban-rural-nature integration;
    (b) creating opportunities for people and businesses[6];
    (c) enhancing accessibility and connectivity; and
    (d) adopting the concept of SGR city.

22. Having regard to the above planning approach as well as other relevant considerations, a strategic planning framework with possible transport connections (**Figure 7**) covering a development area of about 720 ha is proposed for accommodating a planned population of about 255,000 or 350,000 (under two development scenarios) and total jobs of about 215,000. The framework mainly comprises three potential development areas (PDAs) as below:

[6] Industries considered suitable to be developed in NTN include high value-added logistics hub, innovation and technology industries, professional services, producer services and testing and certification, food trade and retail/outlet/wholesale, knowledge-based green industries, and eco/cultural/heritage tourism.

Figure 7 **Strategic Spatial Framework, Potential Development Areas and Possible Transport Connections for NTN (For Indication Only)**



(a) San Tin/Lok Ma Chau Development Node

There is currently a concentration of various brownfield operations at the San Tin (ST)/Lok Ma Chau (LMC) area. Situated at the western part of NTN, the area is an important gateway with the presence of LMC and the LMC Spur Line BCPs. It is proposed that the future Northern Link (NOL) recommended under the Railway Development Strategy 2014 will route through ST to connect the East Rail and West Rail. Given the prime location and the high flow of cross-boundary passenger activities, ideas about providing commercial/retail facilities near the LMC BCP have been floated. However, as ST/LMC is close to the environmentally sensitive Mai Po area, this should be taken into account when formulating the development proposals. The ST/LMC Development Node with a development area of about 175ha (excluding possible cavern development area for utility facilities) could capture the potential brought about by its strategic location and create a slightly job-biased community of 55,000 people and 80,000 jobs with strong economic linkage with the Pearl River Delta (PRD).

(b) Man Kam To Logistics Corridor

With the presence of Lo Wu and Man Kam To (MKT) BCPs, MKT serves as another important gateway in the NTN. There are mixed land uses comprising active agricultural land, village settlements, open storage yards and a cluster of government facilities in the area[7]. Considering its proximity to the MKT cross-boundary facilities and the high volume of cross-boundary freights especially those related to fresh food produce and livestock, the area could be developed into a Logistics Centre with a convenient link to the future LT/HYW BCP. The Logistics Corridor provides about 35ha of agri-logistics consolidation and certification area for storage, testing and certification of food before distribution as well as other modern logistics uses. An estimate of about 4,000 employment opportunities could be created.

[7] Including food control and livestock monitoring facilities near the MKT BCP, Sandy Ridge Cemetery (Sha Ling), San Uk Ling Holding Centre, Sheung Shui Water Treatment Works and the proposed Phase 2 Organic Waste Treatment Facilities at Sha Ling.

(c) NTN New Town

Situated in the east of NTN, the proposed NTN New Town (about 510 ha excluding cavern development area for utility facilities) will comprise five major areas, namely Heung Yuen Wai, Ping Che, Ta Kwu Ling, Hung Lung Hang and Queen's Hill for accommodating a total population of about 200,000 or 300,000 (under two development scenarios) and total jobs of about 130,000. The area is currently intermixed with extensive areas of village type development, open storage, rural industrial uses, and active and abandoned agricultural land. A public housing site is planned at Queen's Hill. At the north, the LT/HYW BCP under construction is scheduled for completion in 2018 to connect the Shenzhen Eastern Corridor. The accessibility of the area will be further enhanced by the future possible railway and the Link Road of LT/HYW BCP under construction. In view of the anticipated increase in demand for sites for scientific research and new industrial use, sites near LT/HYW BCP have been identified for the development of science park and industrial estate as announced in 2016 Policy Address. This will tie in with the proposed Eastern Knowledge and Technology Corridor explained in paragraph 30 below.

Summary of ELM and NTN

23. A broad summary of ELM and NTN is given in **Table 1**. Upon full scale of development, ELM and NTN would have total land area of about 1,000 ha and 720 ha respectively. The land of ELM would be mainly created by reclamation, while that of NTN will be mainly obtained by resumption and clearance of primarily the brownfield sites and agricultural land. The target population of ELM is about 400,000 to 700,000 while that of NTN is either 255,000 or 350,000. Both could provide about 200,000 jobs.

Table 1 Preliminary Broad Information for ELM and NTN

	ELM "Creating a new metro front"	NTN "Developing the New Territories North"
Development Area	About 1,000 ha (largely through reclamation in the waters near Kau Yi Chau (KYC) and the Hei Ling Chau (HLC) Typhoon Shelter, and making better use of the underutilised land in Mui Wo (MW))	About 720 ha (land-based, for more efficient use of brownfield sites and abandoned agricultural land in the New Territories)
Population	About 400,000 – 700,000	About 255,000 or 350,000
Employment	About 200,000	About 215,000
Key Environmental Concerns	▪ Potential air quality impact due to possible strategic road links ▪ Hydrodynamic impact, marine ecology, loss of marine water landscape and wetlands (impacts on coral areas around KYC and HLC and on wetlands, and watercourses with high ecological value in the MW fringe should be avoided)	▪ Potential air quality impact due to possible strategic road links ▪ Reuse and export of treated sewage effluent to minimise pollution impact on the Deep Bay ▪ Possible degradation of rural landscape characters, but opportunity to enhance degraded brownfield sites
Social	▪ Relatively lower social impact as reclamation involves no existing development ▪ Adopt the rural-urban-nature integration approach to minimise impacts on the existing rural settlements in MW ▪ Create considerable and diverse employment	▪ Adopt the rural-urban-nature integration approach to minimise impacts on the existing rural settlements ▪ Some existing local businesses and village settlements may still be affected ▪ Create employment at the boundary location
Economic Benefits	▪ A third CBD ▪ Synergies with CBD in Central, Lantau development and new strategic infrastructure ▪ Enhance resilience of access to the airport and the NWNT	▪ Land for modern logistics and other special industrial uses at the boundary location
Government Investment (Note: No estimated investment cost due to preliminary stage)	▪ Mainly involving reclamation and new infrastructure as well as the relocation of correctional and related facilities on HLC to ensure secured and smooth operation ▪ More strategic infrastructure required	▪ Mainly involving land resumption, compensation, clearance, re-housing, relocation, site formation and associated infrastructure ▪ Strategic transport infrastructure required for larger scale development
Study Progress	Strategic study to be carried out	Preliminary feasibility study undertaken
Implementation Approach	Comprehensive approach with upfront transport and infrastructure provision	Incremental development approach involving clearance, land resumption, re-housing and relocation, and progressive transport and infrastructure provision

24. Environmentally, the design of the reclamation size and configuration of ELM should seek to minimise the impact on the coral areas as well as the potential hydrodynamic impact. For Mui Wo, special attention has to be paid to the natural stream courses and the farmland scattered around the low-lying flatland which are of ecological value. For NTN, in order to minimise the pollution impact on Deep Bay, treated sewage effluent would have to be reused and exported. On the other hand, air quality may be affected by possible strategic road links, while the rural landscape character may be affected by introducing urban developments.

25. For economic benefits, ELM with CBD3 would not only generate employment opportunities but also create synergies with the traditional CBD, other Lantau developments as well as new strategic infrastructure (such as HZMB and TM-CLKL under construction and HKIA Three-Runway System under planning). For NTN, it would provide land for modern logistics and other special industrial uses at the boundary location.

26. Investment costs are not yet available for the two strategic growth areas as both are still at preliminary planning stage. Nevertheless, the costs of developing ELM are expected to be mainly arising from reclamation and associated infrastructure works, while those of NTN would be mainly for land resumption, compensation, clearance and rehousing, site formation and associated infrastructure works.

27. The NTN Study is being undertaking, while commencement of the proposed strategic studies on the Central Waters to facilitate ELM is still pending funding approval by the Legislative Council.

28. For implementation, two different approaches are envisaged for ELM and NTN. Since ELM would involve newly reclaimed land in the Central Waters, a comprehensive approach with upfront infrastructure provision would be required for the development of ELM, with transport provision in tandem with the development pace. On the other hand, the development of NTN could employ a more incremental approach with site formation, phased development and connection with the existing transport infrastructure in the early stage of development, while full scale development of Scenario II with the higher population assumption would hinge upon implementation of a new strategic transport corridor.

Development Axis 1 – Western Economic Corridor

29. Commanding a strategic location in proximity to HKIA, the Hong Kong-Shenzhen Western Corridor as well as the River Trade Terminal and other port-related/logistics uses, together with future enhancement of the strategic transport infrastructure (e.g. TM-CLKL, HZMB under construction and HKIA Three-Runway System under planning), the western part of the territory near Lantau will become an unparalleled international and regional gateway of Hong Kong. Coupled with a number of strategic economic developments along the Corridor in

the near future (such as North Commercial District on Airport Island, Topside Development at Hong Kong Boundary Crossing Facilities (HKBCF) Island of HZMB, business/commercial hub in the Tung Chung New Town Extension, commercial/modern logistics development in Hung Shui Kiu NDA and Tuen Mun West), this Corridor is well placed to embrace many future economic opportunities arising from the Guangdong Free Trade Zones[8] and the "Belt and Road" initiatives. With the new employment, the large population in NWNT could have more jobs closer to homes.

Development Axis 2 – Eastern Knowledge and Technology Corridor

30. The Eastern Knowledge and Technology Corridor comprises six universities (i.e. the Chinese University of Hong Kong, City University of Hong Kong, Education University of Hong Kong, Hong Kong Baptist University, Hong Kong Polytechnic University and Hong Kong University of Science and Technology), industrial and services support centres such as InnoCentre and the Hong Kong Productivity Council, and high technology and knowledge based industries such as data centres, R&D institutes, science park, industrial estates, etc. in Kowloon Tong, Tseung Kwan O, Sha Tin, Tai Po, Kwu Tung North and the Lok Ma Chau Loop. A site near the future LT/HYW BCP will be explored for a new anchor use in the Corridor for possible science park/industrial estate development. The Ma Liu Shui development would offer further potential for development of R&D, higher education, housing and/or other uses. Besides, the Corridor will be connected with CBD2 in Kowloon East complementing the innovation and technology sector, small and medium enterprises, as well as a growing number of business start-ups.

Development Axis 3 – Northern Economic Belt

31. The Northern Economic Belt essentially covers the boundary areas between the Western Economic Corridor and the Eastern Knowledge and Technology Corridor. It commands a strategic location with the presence of six existing boundary crossings and one under construction. It is close to Shenzhen, which is strong in R&D and technological development. This Belt spanning from LMC in the west to LT/HYW BCP under construction in the east will be suitable for warehousing, R&D, modern logistics and other support uses, and emerging industries, thereby creating jobs for existing and future communities in the area. As explained above, NTN, one of the proposed strategic growth areas, is intended mainly for residential, commercial and other special industrial developments, whereas the proposed science park/industrial estate near the future LT/HYW BCP will be at the convergence of the Northern Economic Belt and the Eastern Knowledge and Technology Corridor thereby inducing synergy between the two corridors.

[8] Including Shekou-Qianhai, Nansha and Hengqin.

the near future (such as North Commercial District on Airport Island, Topside Development at Hong Kong Boundary Crossing Facilities (HKBCF) Island of HZMB, business/commercial hub in the Tung Chung New Town Extension, commercial/modern logistics development in Hung Shui Kiu NDA and Tuen Mun West), this Corridor is well placed to embrace many future economic opportunities arising from the Guangdong Free Trade Zones[8] and the "Belt and Road" initiatives. With the new employment, the large population in NWNT could have more jobs closer to homes.

Development Axis 2 – Eastern Knowledge and Technology Corridor

30. The Eastern Knowledge and Technology Corridor comprises six universities (i.e. the Chinese University of Hong Kong, City University of Hong Kong, Education University of Hong Kong, Hong Kong Baptist University, Hong Kong Polytechnic University and Hong Kong University of Science and Technology), industrial and services support centres such as InnoCentre and the Hong Kong Productivity Council, and high technology and knowledge based industries such as data centres, R&D institutes, science park, industrial estates, etc. in Kowloon Tong, Tseung Kwan O, Sha Tin, Tai Po, Kwu Tung North and the Loop. A site near the future LT/HYW BCP will be explored for a new anchor use in the Corridor for possible science park/industrial estate development. The Ma Liu Shui development would offer further potential for development of R&D, higher education, housing and/or other uses. Besides, the Corridor will be connected with CBD2 in Kowloon East complementing the innovation and technology sector, small and medium enterprises, as well as a growing number of business start-ups.

Development Axis 3 – Northern Economic Belt

31. The Northern Economic Belt essentially covers the boundary areas between the Western Economic Corridor and the Eastern Knowledge and Technology Corridor. It commands a strategic location with the presence of six existing boundary crossings and one under construction. It is close to Shenzhen, which is strong in R&D and technological development. This Belt spanning from LMC in the west to LT/HYW BCP under construction in the east will be suitable for warehousing, R&D, modern logistics and other support uses, and emerging industries, thereby creating jobs for existing and future communities in the area. As explained above, NTN, one of the proposed strategic growth areas, is intended mainly for residential, commercial and other special industrial developments, whereas the proposed science park/industrial estate near the future LT/HYW BCP will be at the convergence of the Northern Economic Belt and the Eastern Knowledge and Technology Corridor thereby inducing synergy between the two corridors.

[8] Including Shekou-Qianhai, Nansha and Hengqin.

Supporting Transport Network for ELM and NTN

32. Subject to further study, the conceptual spatial framework would be supported by existing and proposed transport network, as well as the transport infrastructure in the form of railway and highway proposed for ELM and NTN (**Figures 2 and 3**).

ELM

33. For developing ELM, substantial transport infrastructure would be required to support the development which however would also enhance the transport network in Hong Kong West. The associated traffic and transport initiatives are as follows:

(a) to strengthen the linkage between NWNT, Lantau and the Metro Area so as to foster the economic interactions among these areas and bring labour force to HKIA, new developments on Lantau and the proposed third CBD;

(b) to support the development of the Western Economic Corridor with a new regional economic hub in Hung Shui Kiu NDA, new logistics development in Tuen Mun West and new strategic economic centres in North Lantau;

(c) to enhance external connectivity of Lantau (including HKIA) to unlock its development potential; and

(d) to improve the internal connectivity to seize the opportunity associated with the gateway and bridgehead economy around HKBCF Island.

34. In view of the above traffic and transport directions, a NWNT-Lantau-Metro Transport Corridor is proposed with the railway as the backbone transportation mode to internally connect the three components of ELM, viz. KYC, HLC and MW, while externally connecting with Hong Kong Island West, Kowloon West and North Lantau and further with NWNT via HKBCF Island. This Corridor will also include a new strategic highway to connect ELM eastwards to Hong Kong Island West, and northwards to North Lantau Highway which would then be further connected with NWNT via HKBCF Island and TM-CLKL under construction and the proposed Route 11 under planning. It also provides an alternative access to the airport and NWNT. The connection of ELM to MW and North Lantau Highway would be a potential linkage for the even longer term, and subject to the development scale of ELM.

35. Subject to transport need and detailed study, the proposed NWNT-Lantau-Metro Rail Corridor may be extended northward to Shenzhen West for further connectivity and functional integration between Hong Kong West and Shenzhen. This corridor would not only be important in supporting ELM and North Lantau development, it would also help enhance the resilience of the airport connection and provide critical connectivity between the metro core of Hong Kong and major growth

poles in the PRD Region, thereby buttressing Hong Kong's role as a key city in the Region.

NTN

36. For developing NTN, the associated traffic and transport initiatives should be directed to:

(a) support development of a new generation new town, namely NTN New Town, and redefine the region as Northern Economic Belt with self-containment maximised so as to reduce long-distance commuting/travel;

(b) fortify the integration between the Eastern Knowledge and Technology Corridor and the Northern Economic Belt with more efficient transport connections;

(c) grapes the opportunities of the improved accessibility associated with the future LT/HYW BCP and its connecting road; and

(d) optimise the development opportunities along the proposed NOL corridor.

37. Based on the above initiatives, the proposed NTN development would be accessible via the existing and proposed railways and highways in the northern New Territories. The development potential is, however, subject to the capacities of a number of existing highways and railway lines. For the railway network, proposed NOL, which is recommended under the Railway Development Strategy 2014, would serve the NTN development in the west. Depending on the scale of the development and subject to further study, a new railway scheme would be required to support the NTN development in the east. For the highway network, if we adopt the development scenario with a lower population, the maximum employment and a balanced population level in NTN would not worsen the peak hour traffic demand on the Tai Lam Tunnel and Tolo Highway in general. However, the ultimate phase of development under the scenario with more population would inevitably increase traffic loading of these two strategic highways. Hence, the north-south road linkage would need to be improved under this scenario.

38. Opportunities should be proactively explored to provide integrated walkway systems in ELM and NTN (particularly in the Metropolitan Business Core and employment nodes) to encourage walking in a bid to reduce the number of short-motorised trip and the conflict between pedestrians and vehicles. Such pedestrian facilities will increase mobility, enhance road safety and improve local air quality.

39. A Transport and Land Use Assessment (TLUA)[9] is being undertaken under Hong Kong 2030+ to particularly examine the possible and potential transport impacts of

[9] Details of TLUA can be found in the topical paper "Transport Infrastructure and Traffic Review".

ELM and NTN based on the above proposed supporting transport network.

Other Supporting Infrastructure

ELM

40. The base case situation of the drainage, water supply, sewerage and waste management infrastructures has been reviewed. It is concluded that with the new provision of/upgrading of existing infrastructures complemented by sustainable design and strategy, there would not be insurmountable problem with ELM proposals.

41. Based on a preliminary review, new collection networks and sewage treatment works would need to be built supporting the ELM. From the drainage provision perspective, although the ELM is mainly from reclamation with no major risk of flooding, appropriate drainage facilities should be provided for the efficient conveyance of stormwater. The existing waterworks facilities, serving Lantau and its nearby islands are inadequate to cope with the increase in water demand from the ELM, additional waterworks facilities would be required. The municipal solid waste generated from the population and commercial uses of the ELM needs to be properly managed in a sustainable manner. In addition, the construction waste generated from the infrastructure and building works during the initial stage of the development needs to be properly handled as well. Being a future metropolis, we will seek to promote an integrated smart, green and resilient infrastructure system to minimise demand for resources and carbon emissions.

NTN

42. Broad technical assessments in terms of engineering, traffic and other infrastructure capacities, environment and ecology, etc. have been undertaken and confirmed the preliminary development feasibility of the three PDAs.

43. Subject to the outcome of the Hong Kong 2030+ public engagement, further study would be undertaken to explore the opportunity to incorporate an integrated smart, green and resilient infrastructure system in the NTN development. The system would include waste collection and sorting facility, sewage treatment works, sustainable urban drainage, smart water resources management, etc, and these utility and public service facilities would be symbiotically connected together so that the by-products for disposal of one facility could become fuels of another for achieving more efficient use of resources and helping enhance the overall capacity of the facility to withstand and recover from natural or man-made disasters. One possible example is to use the treated sewage effluent for flushing and irrigation while another possible example is to turn waste to energy.

Strategic Environmental Assessment

44. A Strategic Environmental Assessment (SEA) is being undertaken under Hong Kong 2030+ to identify any environmental concerns early in the planning process. In the Metro Area, a number of key strategic directions and actions are proposed to enhance liveability. With retrofitting/redeveloping the congested old urban areas, the air quality and the acoustic environment will be improved by better land use planning and design. Rejuvenation of the old urban fabric with more greening and open spaces will also enhance the living quality.

45. Regarding the two proposed strategic growth areas, the key issues in relation to air quality and noise are the vehicular emission and road traffic noise impact generated from the strategic transport network. Yet, it is anticipated that vehicular emission control technology will evolve and the emission should be progressively reduced in the future. Creation of employment nodes in the strategic growth areas will bring jobs closer to home, so as to reduce home to work journeys and vehicular emission. Furthermore, the railway system connecting the ELM with the Metro Area would alleviate reliance on road-based vehicles circulation generally in Hong Kong.

46. As the ELM will involve reclamation, the hydrodynamic regimes and water quality would be the key concern. The proposed reclamation works of ELM would lead to the loss of marine waters, and the extent and configuration of the reclaimed islands should be further examined. Since sewage would be properly treated by sewerage systems through upgrading or provision of new sewage treatment facilities, it is anticipated that it will not be an insurmountable issue.

47. The planned developments in the Metro Area are mainly located in existing built-up areas, hence no significant impact on ecology is expected. Conserving areas of high ecological and conservation values is an important principle in formulating the conceptual spatial framework. Any new development in the strategic growth areas would not only respect these resources and the natural characters, but also enhance them by linking them through landscape attributes such as greenery and riverine open space corridor. For the configuration of the reclamation for ELM and identification of further developments in MW, it should be carefully planned to avoid any unacceptable disturbance to the valued ecological sites, e.g. key coral areas in KYC and lowland in MW.

48. Regarding the landscape aspect, though the NTN development would not encroach onto the Country Park area, loss of green coverage and change in topography would be resulted. However, there is also an opportunity to enhance the degraded brownfield sites.

49. Taking into account the initial findings of the SEA, a two-pronged planning framework of environmental protection and nature conservation is proposed to guide the formulation of the updated territorial development

strategy[10]. The two-pronged framework seeks to create environmental capacity by integrating conservation and biodiversity considerations into planning and decision making and improving our environment.

50. A more detailed assessment of the preferred option(s) will be conducted at the next stage of the SEA to examine the overall potential impacts of the preferred option(s) and the cumulative effects.

HIGHLIGHTS ON RESULTANT BUILT-UP AND NATURAL AREAS, HOUSING CAPACITY, ECONOMIC LAND CAPACITY, NUMBER OF JOBS AND HOME-JOB DISTRIBUTION

Built-up and Natural Areas

51. It is estimated that the existing and committed/planned developments would entail an expansion of our current built-up areas from about 268 km^2 to about 311 km^2, i.e. an increase by about 43 km^2 (16%). With the two proposed new strategic growth areas (i.e. ELM and NTN), the built-up areas of Hong Kong is estimated to further expand to about 324 km^2 or a further increase by 13 km^2 (another 5%)[11].

52. The natural areas are also expected to increase. The protected terrestrial area is estimated to increase by about 5 km^2 (1%) from about 540 km^2 to about 545 km^2 if the Government takes forward the designation of the proposed Robin's Nest Country Park and the Nature Park at Long Valley. Also, the area of our marine parks/reserve is estimated to significantly increase by about 60 km^2 (2.5 times) from about 24 km^2 to about 84 km^2 if the Government takes forward the designation of the proposed Brothers Marine Park, Southwest Lantau Marine Park, Soko Islands Marine Park and the marine park near Three Runway System, as well as the provision of a compensatory marine park for the integrated waste management facilities near Shek Kwu Chau.

Housing Capacity

53. The maximum housing capacity of all developments under the proposed spatial framework is about 9 million people. It should be emphasised that this figure is not a population target, but the possible housing capacity that could be generated under Hong Kong 2030+ on the basis of the currently projected number of domestic households, projected household size, assumed flat size, assumed

[10] Details of two-pronged planning framework can be found in another topical paper, namely "Environmental Protection and Nature Conservation for Sustainable Growth".

[11] The actual built-up areas may be smaller as some areas may be carved out as non-development areas at the detailed design and implementation stage. Besides, parts of the committed/planned developments and strategic growth areas involve re-planning of the existing built-up areas.

vacancy rate and demolition and redevelopment, etc. More importantly, such capacity could give about 10% buffer of the peak population projection of 8.22 million by 2043 under the baseline projection, noting that the buffer could be translated into the manoeuvring spaces not only for improving our quality of living, such as larger housing space, more public amenities and more communities facilities, but also for coping with unforeseeable circumstances including changes in the above projection assumptions. In other words, the buffer could provide us the readiness and flexibility to respond swiftly to aspirations and changes.

Economic Land Capacity

54. With a total development area of about 1,720 ha for ELM and NTN, the proposed spatial framework would provide adequate land to meet various economic needs including the estimated total long term shortfall of more than 300 ha for CBD Grade A Offices, Industries, Special Industries and other specific uses as highlighted in the topical paper on Consolidated Land Requirement and Supply Analysis. Based on the detailed supply and demand figures in the same topical paper, it could be further derived that the capacity for Grade A offices would roughly increase from the existing of about 9 million m^2 GFA to more than 14 million m^2 under the proposed spatial framework, while the corresponding increase for industrial uses (including Industries and Special Industries) would be from about 20 million m^2 GFA to about 29 million m^2.

Home-job distribution

55. Functionally, ELM and NTN, together with other committed/planned projects in the New Territories, could help redress the existing unbalanced spatial distribution of homes and jobs. Based on the maximum planned population/employment of 700,000/200,000 in ELM and 350,000/215,000 in NTN, it is roughly estimated that the relative proportion of population and employment in the Metro Area would reduce from about 59% to 45% and from about 76% to 62% respectively. The corresponding share in the New Territories would increase from about 41% to 55% for population and from about 24% to 38% for employment.

IMPLEMENTATION OF ELM AND NTN

56. Overall, the proposed conceptual spatial framework with two strategic growth areas at ELM and NTN will not only address the housing need, but also provide land and spaces for economic uses, community facilities and infrastructure. Through close monitoring, we would be able to determine the triggering points for taking forward the two strategic growth areas.

57. ELM and NTN at their maximum scale could provide a reasonable land reserve to allow us to respond swiftly to any land requirement in the long run beyond 2030. On this basis, a flexible implementation approach is recommended so as to allow one or more development

components of the two strategic growth areas to be independently triggered to sustain social and economic growth. Besides, the pace and quantum of the development required should be closely monitored so that we could get more prepared for any additional and/or unexpected demand.