



**2030**

# Transport Infrastructure and Traffic Review



Planning Department  
October 2016

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# 1

## PREFACE

Some of the key potential challenges to our transport system beyond the year 2030 from different perspectives, viz. the changing population profile, the unbalanced spatial distribution of home and job places, growth in car ownership and continuous rise in cross-boundary passengers are covered in this paper. Then, the overall picture of our strategic railway and highway transport network beyond 2030 is depicted, followed by a general review on the performance of our baseline future transport network beyond the year 2030. It enables readers to have an initial understanding of the traffic and transport conditions and challenges in the territory in the long term. Last but not least, this topical paper gives a summary on the possible traffic and transport arrangement for the two strategic growth areas (“SGAs”) at the East Lantau Metropolis (“ELM”) and the New Territories North (“NTN”), put forward in the proposed conceptual spatial framework. The preliminary traffic assessments presented herewith facilitate the formulation of the strategic directions for future development under the Hong Kong 2030+.

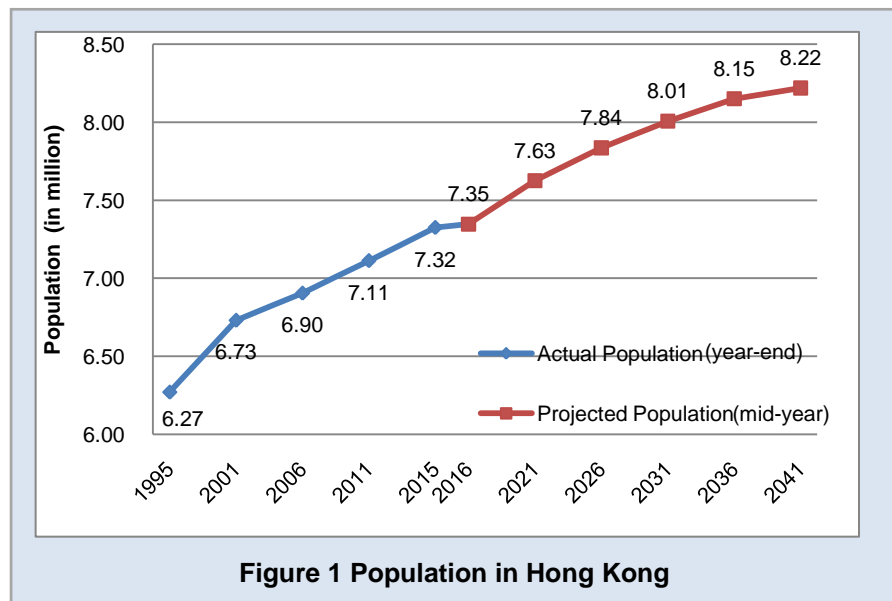
This topical paper constitutes part of the research series under “Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030” (“Hong Kong 2030+”). The findings and proposals of the paper form the basis of the draft updated territorial development strategy which is set out in the Public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

# 2

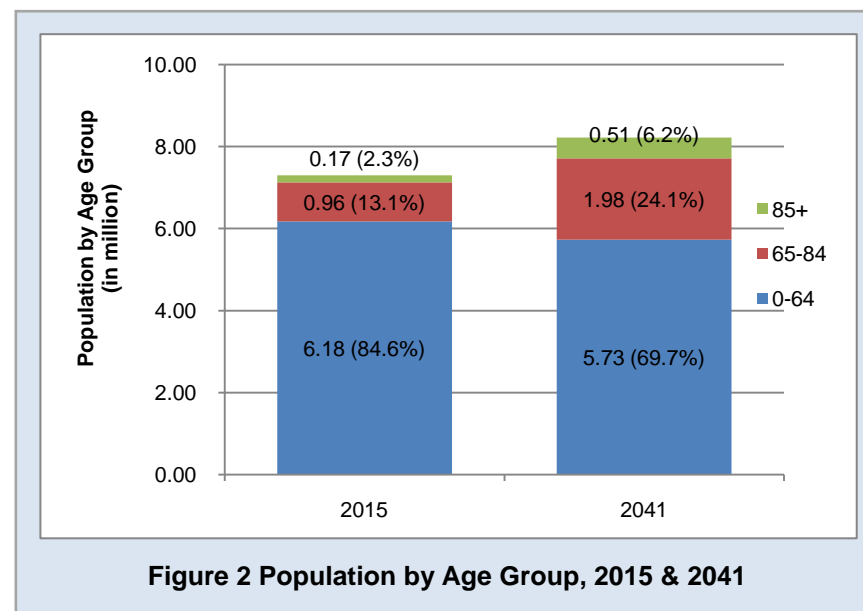
## CHALLENGES

### Changing Demographic Profile

2.1 As depicted in the “Hong Kong Population Projections 2015-2064” released by Census and Statistics Department, our population will continue to grow in the coming decades, albeit at a slower rate. The total population in the territory is forecast to grow from 7.32 million in 2015 to 8.22 million in 2041. The corresponding average annual growth rate is about 0.5%, as compared with 0.8% per annum growth in the past two decades (Figure 1). Additionally, the proportion of population aged 65 and over is projected to rise markedly,



from 15% in 2015 to 30% in 2041, implying that around one in three persons would be elders (Figure 2). The proportion of “old-old” group (i.e. 85+) would escalate from 2% in 2015 to 6% in 2041.



2.2 The slow-down in population growth, coupled with the ageing demographic profile, would affect the transport needs in terms of trip making frequency and travel patterns. An ageing population would typically result in a smaller workforce and a larger number of retired people, leading to a decrease in work-related trips, particularly

during the peak hours while a relatively higher travel demand for social activities in the non-peak hours. Planning of transport facilities for better seamless modal interchange, with incorporation of the “inclusive mobility”<sup>1</sup> concept, and provision of more elderly-friendly facilities for using public transport, will be necessary to facilitate the mobility of the elderly.

## **Unbalanced Spatial Distribution of Population and Employment**

2.3 Currently, 41% of our population resides in the New Territories (“NT”) (excluding Tsuen Wan and Kwai Tsing), but only 24% of our employment is provided in the same area (**Figure 3**).

2.4 The findings of the “Travel Characteristics Survey 2011” (“TCS 2011”) conducted by Transport Department (“TD”) reflect the unbalanced spatial distribution of population and employment. While there were about 50% and 40% self-containment<sup>2</sup> trips on Hong Kong Island and in Kowloon respectively, the corresponding ratios in the NT new towns were comparatively low, for example 19% in

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<sup>1</sup> “Inclusive mobility” is an integrated transport system that works for everyone, regardless of their age or physical mobility, to enjoy the pedestrian environment and transport infrastructure. Accessible transport infrastructure and public transport services and the associated facilities, as well as safe and barrier-free pedestrian environments are fundamentally important to delivering this concept.

<sup>2</sup> According to the definition in the “TCS 2011”, “self-containment” refers to the proportion of intra-district movements among all trips to/from a particular district. A higher ratio of self-containment reflects that a large proportion of the trips to/from that district are intra-district movements, or conversely, a lower ratio of self-containment implies that a larger proportion of the trips are cross-district movements.

Fanling/Sheung Shui and 10% in North Lantau. The lower self-containment ratio in the NT illustrates that more cross-regional traffic is generated (particularly the outbound commuting trips to the Metro Area<sup>3</sup>) and that generally imply longer home to work journeys and commuting time, and congestion on some of the key commuting corridors during peak hours. Besides, longer journeys imply more energy consumption, and hence more carbon emission. Other possible social consequences include less family/leisure time, lower productivity, deterrents to people joining the labour force, etc.

2.5 For major corridors between Tsuen Wan/Sha Tin and the northern NT, the counter-peak direction traffic (i.e. northbound direction to the northern NT) is only about 60% of that of the critical metro-bound traffic during the morning peak period<sup>4</sup>. Taking Tolo Highway and Tuen Mun Road, the skeletons of the road network in the NT, for instance, while the critical metro-bound carriageways are operating with volume to capacity ratios<sup>5</sup> in the range of 0.9-1.0, traffic at the counter-peak direction is observed to be utilising about 50-60% of their capacities.

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<sup>3</sup> Metro Area covers Hong Kong Island, Kowloon, Tsuen Wan and Kwai Tsing.

<sup>4</sup> Figures are derived from the traffic count data published in the “Annual Traffic Census 2015” conducted by TD.

<sup>5</sup> A volume to capacity (v/c) ratio is an indicator which reflects the traffic situation of a road during peak hours. A v/c ratio below 1.0 is considered acceptable. A v/c ratio above 1.0 indicates the onset of mild congestion and a v/c ratio between 1.0 and 1.2 indicates a manageable degree of congestion. A v/c ratio above 1.2 indicates the onset of more serious congestion.

2.6 The railway network shares similar characteristics. The patronage at the counter-peak direction at the busy sections of East Rail Line (“ERL”) and West Rail Line (“WRL”) is observed to be only 36% and 18% of those in the opposite direction respectively.



Tai Po Road (Sha Tin Section) near Sha Tin Racecourse

2.7 For strategic planning, better use of the spare capacities in the counter-peak direction of the transport system during the peak hours may provide opportunities for future development of our city.

2.8 To a great extent, the transport network capacity (particularly for the traffic corridors between the NT and the Metro Area) could impose restraints on the future development in Hong Kong. The scope for provision of more new transport infrastructures is severely limited by site constraints and environmental concerns.

2.9 Environmental capacity (i.e. the ability of the physical environment to sustain human activities and biodiversity) is vital to promote the sustainable development of Hong Kong. It is important not only to ensure that developments do not bring any unacceptable impact on the environment but also to consider how the environment can be enhanced in general. In this regard, to “create capacity” from traffic and transport perspectives for accommodating the future population and economic growth of Hong Kong, apart from building new transport infrastructure, there is a call for better managing the private vehicle (“PV”) growth and the use of limited road space. The principle of “Transport and Land Use Optimisation” (see Section 4 for more details) should also be adopted in the strategic planning for Hong Kong to make more efficient use of the spare capacities in the transport network.

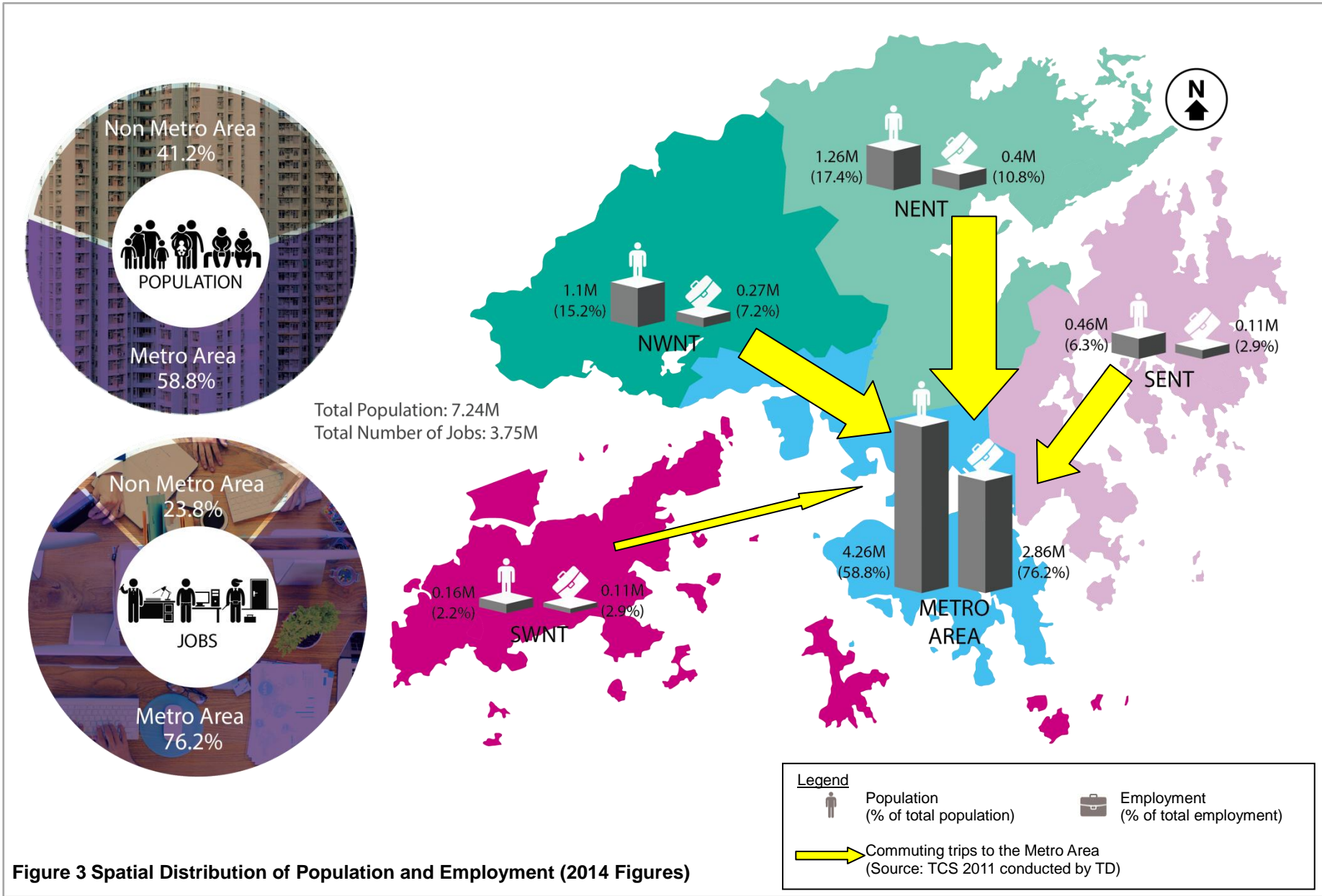


Figure 3 Spatial Distribution of Population and Employment (2014 Figures)



## Increasing Growth in Private Vehicles

2.10 Despite the fact that Hong Kong has one of the most efficient public transport systems in the world, the sharp growth in PV, i.e. private cars and motorcycles, is worth noting. As at the end of 2015, the number of licensed PVs is about 569,600, with an average annual growth rate of over 3% over the 20-year period from 1995-2015, compared with about 0.8% and 1.7% for the average annual growth rate of population and household respectively over the same period (**Figure 4**), resulting in an increase in the ratio of PV ownership from 172 to 231 per 1,000 households (**Table 1**).

Year	End-1995	End-2015
Licensed PVs	306,500	569,600
Population (million)	6.27	7.32
Household (million)	1.78	2.47
PV Ownership Rate (vehicles/1,000 households)	172	231

**Table 1** Private Vehicle Ownership

2.11 If the historical growth continues, the number of PVs would continue to grow, which would not be sustainable in the long run in terms of land requirements for new roads, highways, car parks and other supporting facilities. With many more cars sharing the limited road space in urban areas in particular, more severe traffic congestion, slower journey speeds and more pollutant emissions would be expected.



2.12 From a traffic and transport perspective, PVs contribute to 50%<sup>6</sup> of road traffic in some major roads such as Lion Rock Tunnel and Tolo Highway but only carry around 10%<sup>7</sup> of total daily passenger trips, and are thus considered less efficient passenger carriers. Owing to the geographical, limited space, engineering and environmental constraints and the rising public concerns against building new roads, providing new highway infrastructure to accommodate the ever growing traffic demand may not be sustainable in the long run. Effective management of growth of PVs is therefore vital to ensure that they will not impose a greater burden on our roads, which in turn will reduce the efficiency of our public transport services. In fact, as reviewed in the “Report on Study of Road Traffic Congestion in Hong

<sup>6</sup> Source: “Annual Traffic Census 2015” conducted by TD.

<sup>7</sup> The figure represents the percentage of daily boardings by private vehicle, which is derived from the survey data of the “TCS 2011” conducted by TD.

Kong” released by Transport Advisory Committee (“TAC”) in 2014, the growth rate of total length of public roads in Hong Kong is expected to slow down to around 0.4% per annum between 2014 and 2020, lagging far behind the current growth in the PV fleet size.



Gloucester Road Westbound (near Immigration Tower)

### **Increasing Cross-boundary Travel with Pearl River Delta Region**

2.13 Increasing social and economic interactions between Hong Kong and the Pearl River Delta (“PRD”) Region are also reflected in the growth of cross-boundary travel between Hong Kong and the Mainland. Administrative data and findings from the Cross-boundary Travel Surveys conducted over the years show an increase in cross-boundary travel:

- (a) Average daily number of cross-boundary passenger trips at land-based control points rose from 316,500 in 2003 to 610,000 in 2015.
- (b) Average daily cross-boundary vehicle trips rose from 35,800 in 2003 to 43,000 in 2010. Since 2010, the number of vehicle trips has remained relatively stable.
- (c) For passenger trips, Lo Wu Control Point (37.4%) was the busiest control point in 2015, followed by Lok Ma Chau Spur Line Control Point (27.8%), Shenzhen Bay Control Point (16.9%) and Lok Ma Chau Control Point (12.8%).
- (d) According to the results of the Cross-boundary Travel Survey 2013/14, Shenzhen (74.3%) and Dongguan (7.5%) were the most popular places of visit for people living in Hong Kong. The majority of passenger trips made by Hong Kong residents living in the Mainland started from Shenzhen (89.8%). The estimated number of “frequent trip makers<sup>8</sup>” was 738,000 in 2014.
- (e) The share of trips by Hong Kong residents living in the Mainland increased from 12.6% in 2011 to 13.6% in 2014, and in absolute terms they increased from an average daily of 70,800 in 2011 to 82,400 in 2014.

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<sup>8</sup> According to the Cross-boundary Travel Survey 2013/14, “frequent trip makers” is defined as those who usually travelled at least once a week between Hong Kong and the Mainland.

2.14 Along with the deepening of cooperation between the Mainland and Hong Kong propelled by new initiatives including the Guangdong, Hong Kong-Macao cooperation platforms in Qianhai, Nansha and Hengqin etc., the growth in cross-boundary travel is expected to continue into the future. Consideration of further enhancement of cross-boundary transport infrastructure and facilities is thus necessary.

# 3

## FUTURE TRANSPORT NETWORK

### Railways as Backbone

3.1 Currently, railways account for more than 40% of the passenger trips in the public transport domain. Upon completion of the three new railway projects currently under construction (i.e. the South Island Line (East), the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Hong Kong Section) (“XRL”) and the Shatin to Central Link (“SCL”)), in tandem with the implementation of railway proposals (see **Figure 5**) recommended in “Railway Development Strategy 2014” (“RDS-2014”), the railway network is expected to serve areas inhabited by 75% of the local population and about 85% of job opportunities. The rail share in the public transport patronage will further rise to between 45% and 50% in the long run depending on a myriad of variables, including transport policy, population and employment growth, as well as changes in economic conditions<sup>9</sup>.

3.2 The RDS-2014 sets out the blueprint for territory-wide railway development up to 2031 and the direction for updating the railway development strategy, viz. there is a need to consider enhancing the existing railway network with smaller-scale projects in order to optimise the coverage of railway lines (e.g. Tuen Mun South Extension) and provide relief to the present and potential bottlenecks

<sup>9</sup> Source: Railway Development Strategy 2014.

(e.g. North Island Line). Meanwhile, the proposed new development areas (“NDAs”) in the NT might require major regional railway corridors to link up the northwest NT (“NWNT”) and northeast NT (“NENT”).

<b>Total Length</b> : <b>221 km</b>	<b>Rail Line</b> : <b>22 (nos.)</b>
Heavy Rail : 185 km	Heavy Rail : 10 (nos.)
Light Rail : 36 km	Light Rail : 12 (nos.)
<b>Daily Ridership</b> : <b>5.17 million</b>	<b>No. of Stations</b> : <b>154 (nos.)</b>
Heavy Rail : 4.69 million	Heavy Rail : 86 (nos.)
Light Rail : 0.48 million	Light Rail : 68 (nos.)

**Table 2 Existing Rail Network (as at end-2015)**

3.3 In setting the priority and indicative timing for the implementation of the recommended railway schemes for planning purpose, we have had regard to the following considerations –

- (a) plans for land use development and local housing demand;
- (b) transport needs in Hong Kong: high level of

connectivity, relief to the loading of critical transport corridors, and operational robustness of the railway network;

- (c) economic return and other benefits; and
- (d) views of the public and local communities.

### ***The Metro Area***

- 3.4 Of the seven railway projects recommended under RDS-2014, the North Island Line will be an extension of the Tung Chung Line and Tseung Kwan O Line along the northern shore of Hong Kong Island. As a parallel route to the Island Line, the new railway line will play an important role in improving east-west connectivity and alleviating the loading of the Island Line to cope with the anticipated growth in commuting needs. It will also help redistribute the cross-harbour trips among the existing Lines (viz. Tsuen Wan, Tung Chung and Tseung Kwan O Lines) and the future SCL.
- 3.5 South Island Line (West) will serve the western and southern parts of Hong Kong Island, extending the railway coverage to new catchment areas in Aberdeen, Wah Fu, Cyberport and Pok Fu Lam. Having regard to the expected growth in population and visitors in the western part of the Southern District, this new railway line is recommended to address the emerging transport demand and relieve the pressure on the road network.
- 3.6 East Kowloon Line will run along the north Kwun Tong area, connecting the Diamond Hill Station of the Kwun Tong Line (and the future SCL) and the Po Lam Station of the Tseung Kwan O Line, to serve the densely populated

areas in north Kwun Tong areas, as well as the committed major development projects in the area. At a strategic level, the East Kowloon Line can enhance the overall network robustness by offering an alternative railway route for trips between the Tseung Kwan O area and Kowloon, and by serving as a parallel line to the existing Kwun Tong Line.

### ***The New Territories***

- 3.7 To dovetail with the development programmes of the NT region, Northern Link, Tuen Mun South Extension, Hung Shui Kiu Station and the Tung Chung West Extension are proposed.
- 3.8 The Northern Link will be a railway line between the Kam Sheung Road Station on the existing WRL and a new station at Kwu Tung on the Lok Ma Chau Spur Line. It will connect the ERL and the WRL, forming a loop, and in essence improving the east-west connectivity in northern NT.
- 3.9 The Tuen Mun South Extension will extend the WRL from the existing Tuen Mun Station southwards to Tuen Mun South, so as to improve railway access to the community south of the current Tuen Mun town centre and connectivity to Tuen Mun Ferry Pier.
- 3.10 Hung Shui Kiu Station will be located between the Tin Shui Wai Station and the Siu Hong Station on the WRL, primarily to serve the future Hung Shui Kiu NDA and nearby areas.
- 3.11 Besides, the Tung Chung West Extension will extend the

existing Tung Chung Line westward from Tung Chung Station, to a new station in Tung Chung West to serve the existing Yat Tung Estate and other potential developments nearby. Also, to tie in with the proposed Tung Chung New Town Extension, a new Tung Chung East Station is proposed at the Tung Chung East New Planning Area.

## **Future Highway Network at a Glance**

3.12 In the ensuing paragraphs, a brief discussion will be given on the future highway projects.

### ***The Metro Area***

3.13 Today, most of the east-west traffic movements across the northern shore of Hong Kong Island as well as the central Kowloon are already operating close to or at capacity in peak hours. The Government is committed to pursuing improvement measures to alleviate road traffic congestion and safeguard a smooth transport system as a whole.

3.14 As for the northern shore of Hong Kong Island, currently, the Connaught Road Central - Harcourt Road - Gloucester Road Corridor is the only strategic route connecting the eastern and western Hong Kong Island serving both the Central and Wan Chai areas. This corridor, however, has already been saturated and cannot cope with anticipated traffic growth, and long traffic queues are commonly formed at different stretches of the roads during busy hours. The Central – Wan Chai Bypass under construction (see **Figure 5**) will divert through traffic away from the Core Business District (“CBD”), catering for anticipated traffic growth and

alleviating congestion along the existing Connaught Road Central - Harcourt Road - Gloucester Road corridor.



Gloucester Road Eastbound (Outside Central Plaza)

3.15 On the Kowloon side, the proposed Central Kowloon Route, running in an east-west direction across central Kowloon mostly in tunnel form, will connect the West Kowloon reclamation area in the west with the future Kai Tak Development/Kowloon Bay in the east. The future Central Kowloon Route, together with the proposed Trunk Road T2 in Kai Tak Development and Tseung Kwan O-Lam Tin Tunnel under construction, will form Route 6 in the strategic road network and serve as an east-west express link between Kowloon and Tseung Kwan O areas. Upon completion, this strategic route will also provide the necessary relief to the existing heavily trafficked road network in the central and eastern Kowloon areas, and reduce the related environmental impacts on these areas.

## ***The New Territories***

- 3.16 In order to satisfy the future transport demand in the NWNT, two new strategic roads, namely Tuen Mun Western Bypass (“TMWB”) and Route 11, (as indicated in **Figure 5**), are being planned at the moment. The Tuen Mun-Chek Lap Kok Link (“TM-CLKL”) (under construction) together with the proposed TMWB will form the most direct route connecting the NWNT with the Hong Kong-Zhuhai-Macao Bridge (“HZMB”), Hong Kong International Airport (“HKIA”) and North Lantau. In a wider regional context, the road system further connects with Shenzhen, the rest of the PRD Region and Guangdong West through Shenzhen Bay Boundary Control Point (“BCP”) in the north and the future HZMB in the west.
- 3.17 In view of the future developments in NWNT, including the proposed Hung Shui Kiu NDA and other developments in the region, it is expected that the major roads connecting NWNT and the main urban areas would be busy during morning peak hours. With a view to enhancing the connectivity of NWNT with other districts, the proposed Route 11 under planning is necessary for alleviating the pressure of the potential traffic bottlenecks along Tuen Mun Road and Tai Lam Tunnel and link up North Lantau and Yuen Long.
- 3.18 Apart from re-distributing the cross-boundary traffic among the existing crossings in the east, the new connecting road ancillary to the future Liantang/Heung Yuen Wai (“LT/HYW”) BCP under construction will link Fanling Highway and the LT/HYW BCP that will enhance the connectivity to the NENT areas. Furthermore, the improved accessibility would enhance the development potential of these areas.

## **Connecting with Neighbouring Areas in the Region**

- 3.19 As discussed in Section 2 above regarding the increasing regional mobility, with the increasingly closer ties between Guangdong, particularly the PRD, and Hong Kong in terms of social and economic development, strategic planning consideration for Hong Kong should adopt a wider perspective to take into account the spatial development pattern in the region. Transport linkage with neighbouring cities, Shenzhen in particular, is vital in catalysing regional cooperation and synergies.
- 3.20 New cross-boundary transport infrastructure and BCPs viz. the HZMB, the XRL and the LT/HYW BCP, are under construction, and these facilities will further enhance the connectivity within the Greater PRD Region upon commissioning.
- 3.21 Hung Shui Kiu NDA falls along the Western Economic Corridor identified in the Conceptual Spatial Framework for Hong Kong 2030+ (see Section 5 for the details) and is identified as a gateway in the NWNT from the Mainland. Considering its geographical proximity, to materialise the potential of developing the NDA into an economic centre in the NWNT region, there is a need to further enhance the cross-boundary connectivity by capitalising on the strategic transport infrastructure and boundary crossing facilities in the area in the very long term.
- 3.22 As for the eastern side of the boundary, the future LT/HYW BCP and its connecting road would extend the economic hinterland of Hong Kong for future regional cooperation and development, enabling Hong Kong to grasp the development opportunities associated with the

new development districts in Shenzhen East, and the provinces further east. The new connecting road linking Fanling Highway and the LT/HYW BCP will improve the accessibility to the northern NT as a whole, and unleash the development potentials in the area. Apart from addressing the acute housing demand, major development areas in the northern NT could provide development space for the industries which can capitalise on the strategic boundary location.



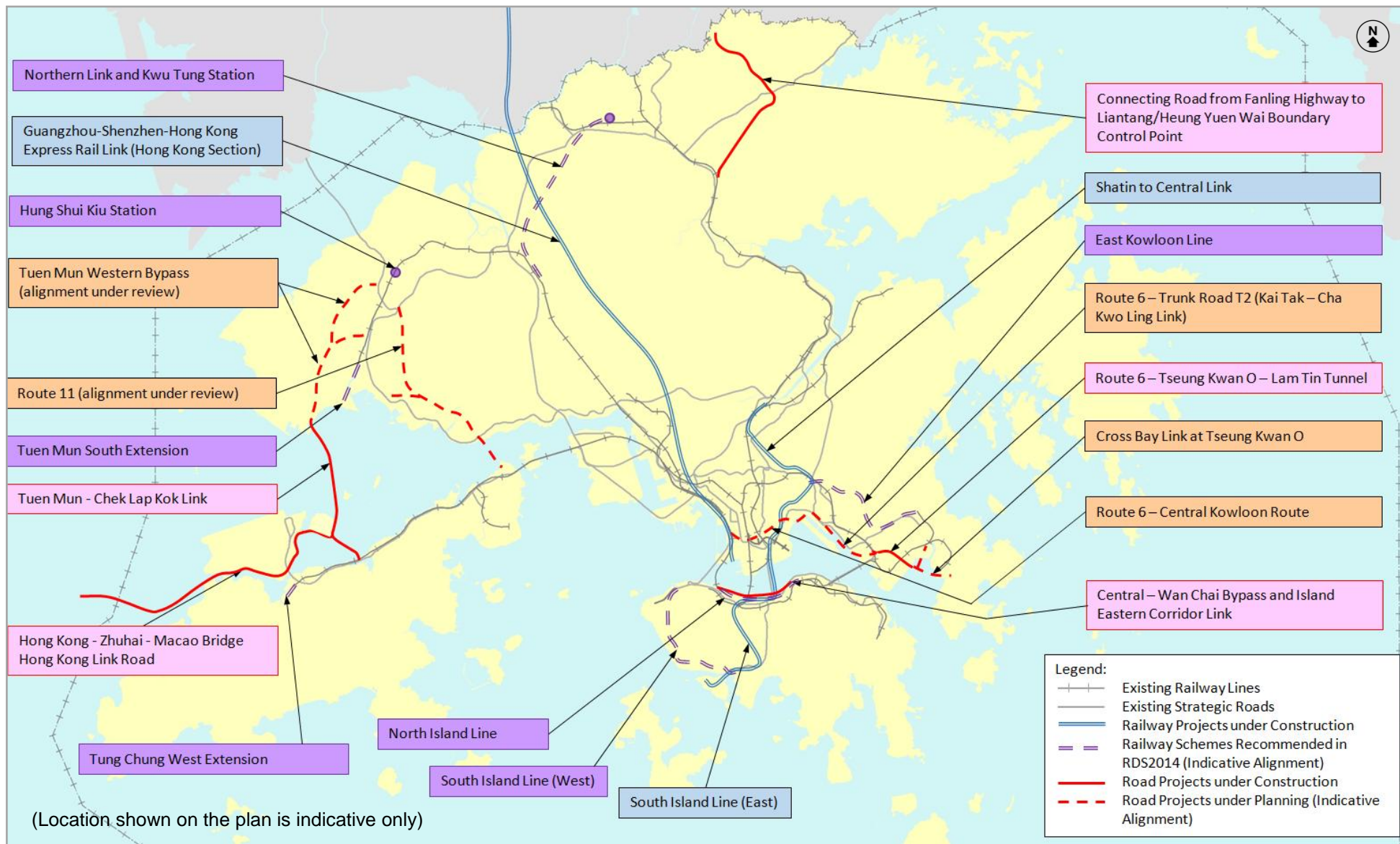


Figure 5 Existing, Committed and Proposed Railways and Strategic Highways

## Transport System Performance

3.23 In order to give the overall picture of how the transport system will perform in the long term against the foregoing railway and highway infrastructure, a broad review on the baseline conditions for cross-harbour traffic, movements between NENT and Kowloon, and key corridors in the NWNT, representing the three major cross-regional trips, is given in the ensuing paragraphs.

### ***Cross-harbour Traffic***

3.24 Among the three road harbour crossings, both Cross Harbour Tunnel (“CHT”) and Eastern Harbour Crossing are currently operating over capacity during the peak hours. While the capacity of the Western Harbour Crossing has yet been reached, its usage is constrained by the traffic congestion along its connecting strategic roads. It is anticipated that traffic congestion of all the three road harbour crossings will continue. To better rationalise the traffic at road harbour crossings, the Government has commenced a study on the overall strategy and feasible options for rationalising traffic distribution among the three road harbor crossings, and will submit toll adjustment proposals to the LegCo Panel on Transport for discussion within the 2017-18 legislative year.



Approach roads leading to Cross Harbour Tunnel to Hong Kong

3.25 Given that both sides of Victoria Harbour have already been built-up, it will be extremely challenging to build the fourth road harbour crossing linking Kowloon and Hong Kong Island due to physical, environmental constraints and social sentiments, not to mention its approach roads, and connections to existing strategic roads. Therefore, the solution may rest with diverting the Hong Kong Island-bound traffic from using the heavily trafficked corridors and bypassing the densely built up areas in Kowloon. As such, the possibility of constructing a new road link connecting Hong Kong Island with areas beyond Kowloon and outside the Victoria Harbour (such as North Lantau and the NWNT) should be explored.

## ***NENT – Kowloon Traffic***

3.26 For traffic between the NENT and the Metro Area, Lion Rock Tunnel is the most popular route and currently operating over its capacity with observed traffic queues during the morning peak hours. It is followed by, in order of traffic volume, Tate’s Cairn Tunnel, Shing Mun Tunnels and Eagle’s Nest Tunnel. With the gradual population increase in the NENT areas, the traffic conditions in Lion Rock Tunnel and Tate’s Cairn Tunnel are expected to deteriorate. However, Shing Mun Tunnels and Eagle’s Nest Tunnel (cum Sha Tin Height Tunnel) would continue to perform with spare capacity.



Approach roads to Lion Rock Tunnel to Kowloon

3.27 The existing NENT-Kowloon links (namely, Lion Rock, Tate’s Cairn, Shing Mun and Eagle’s Nest Tunnels) providing a total of nine traffic lanes for each direction of traffic movements and as a whole, would accommodate the expected traffic needs adequately. Indeed, the key

of the improvement to the network performance as a whole is to optimise the usage of the existing infrastructure, say by making better use of the spare capacities at Shing Mun and Eagle’s Nest Tunnels.



Sha Tin Height Tunnel

3.28 Traffic conditions at the upstream of these NT - Kowloon links warrant careful consideration. In Sha Tin, where metro-bound traffic from different areas in the north converges, it is anticipated that the traffic conditions would further deteriorate if no mitigation measures are taken. For instance, Tai Po Road (Sha Tin Section) is operating over capacity with observed traffic queues during the peak hours, let alone the frequent cross-weaving traffic movements that further slow down the traffic platoon. A study is being commissioned by the Civil Engineering and Development Department (“CEDD”) to widen the existing Tai Po Road (Sha Tin Section) between Sha Tin Rural Committee Road near Sha Tin Plaza and Fo Tan Road near Man Wo House of Wo Che Estate in order to cope with the anticipated

increase of traffic demand.

3.29 As for the road link further north, Tolo Highway is the primary expressway connecting the new towns of Sha Tin and Tai Po in a north-south direction. The traffic loading on this highway is anticipated to intensify with the increasing population in the coming decades. Despite the past and ongoing efforts to implement various road improvement projects for the strategic highways in the NENT (e.g. Tolo Highway and Fanling Highway), there are limitations to the further widening of strategic roads in the NENT to support its long-term developments. The capacities of the strategic transport connections between the NENT and the Metro Area would limit the development potential of the NENT in the long run. Given the limited scope to further improve the capacities of the existing highways, e.g. through widening, effective land use planning (i.e. better population and job balance) will need to be considered. In the long term, it may be necessary to provide a new regional transport corridor running in the north-south direction connecting NENT to Sha Tin and/or the Metro Area in order to lessen the traffic loading on Tolo Highway.

### ***Key Corridors in NWNT***

3.30 In view of the future developments in NWNT, including the proposed Hung Shui Kiu NDA, it is expected that the major roads connecting NWNT and the main urban areas, namely various sections of Tuen Mun Road and Tai Lam Tunnel, would become busy during morning peak hours. It is forecast that the completion of TM-CLKL (currently under construction), and TMWB and Route 11 under planning would improve the traffic conditions along the aforementioned existing roads and enhance the connectivity of NWNT with other districts. While Route

11 would divert traffic from the competing routes, including Tai Lam Tunnel, Ting Kau Bridge and Tuen Mun Road, there may be a potential bottleneck along Lantau Link for accommodating the additional traffic flow brought by Route 11 to North Lantau. Therefore, when planning for the proposed Route 11, it is necessary to review the traffic impacts on the connecting roads in North Lantau and the urban areas, taking into account the recommended long-term territorial development strategy and in particular, the developments in the NWNT, North Lantau and its adjacent areas.

### ***Railways***

3.31 As far as the railway network is concerned, ERL and WRL which serve major passenger movements between the NT and the Metro Area and represent two of the busiest railway lines in the existing railway network, are operating with congestion concerns during the peak hours. Similarly, heavy cross-harbour passenger movements during commuting peaks along the cross-harbour sections of Tsuen Wan Line (Tsim Sha Tsui – Admiralty) and Tseung Kwan O Line (Yau Tong – Quarry Bay) also reveal congestion concerns.

3.32 In the future, with the existing railway signalling system upgraded and train frequency maximised and the commissioning of new railway proposals, especially the SCL that will connect to the ERL and WRL to form two strategic railway corridors, namely “East West Corridor” and “North South Corridor”<sup>10</sup> (**Figure 6**), it is foreseen

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<sup>10</sup> “East West Corridor” – Formed by the existing WRL, the Tai Wai to Hung Hom section of the SCL currently under construction and the existing Ma On Shan Line.

“North South Corridor” – Formed by the existing East Rail Line and the Hung Hom to Admiralty section of the SCL currently under construction.

that the multi-modal public transport services with rail as backbone and complemented by other road-based public transport services, would generally be adequate to accommodate the anticipated commuting demands as a whole, although the waiting time may be longer or the compartments may be more crowded at certain existing railway sections/stations due to the prevailing infrastructural constraints of the existing railway lines, such as shorter platforms at some railway stations.

3.33 In particular, the foregoing North-South Corridor which will provide the 4<sup>th</sup> cross-harbour railway passage, would divert some of the cross-harbour passengers away from the most critical sections of Tsuen Wan Line and Tseung Kwan O Line. The SCL would also divert passengers from the busiest section of ERL (Tai Wai – Kowloon Tong). As for the WRL (forming part of future East-West Corridor), the service level would still be subject to the infrastructural constraints.

3.34 Therefore, in formulating the spatial planning of future developments, due consideration should also be given to minimise unnecessary long distance commuting between the NT and the Metro Area. This point is further discussed in the next section.



Figure 6 East West Corridor and North South Corridor  
(for indication only)

# 4

## STRATEGIC DEVELOPMENT DIRECTIONS FROM TRAFFIC AND TRANSPORT PERSPECTIVE

### Transport and Land Use Optimisation

- 4.1 Transport infrastructure capacity and the spatial development pattern are two interconnected elements. As revealed in Section 2, while 41% of our population resident in the NT, majority (76%) of the job places are located in the Metro Area. The imbalance in home-job spatial distribution is attributable to the dominating directional travel patterns that the metro-bound traffic corridors are showing capacity concerns whereas the counter-bound links are operating smoothly. Therefore, to lessen and reshape this travel patterns and to make efficient use of the spare capacities in our transport system, there is a call for better land use planning for optimising the population and employment distribution in the territory.
- 4.2 If there are adequate employment opportunities in SGAs, the need for residents in the locality and its surrounding areas to travel to the urban districts to work would be reduced, which would in turn ease the burden on the external transport linkages. A balanced home and job mix would minimise the scale of supporting transport infrastructure.
- 4.3 As a long-range strategic planning tool, there is a need for Hong Kong 2030+ to take into consideration the possible transport arrangement vis-à-vis the population

and employment patterns in proposing the strategy for spatial development and the corresponding infrastructure.

### Railways Continue to be the Backbone of Future Developments

- 4.4 Railways are environmentally friendly and efficient mass carriers. They are well proven to be the most reliable and efficient system for carrying a large number of people. Pursuant to the “Hong Kong Moving Ahead: A Transport Strategy For The Future”, the use of railways as the backbone in the transport system would remain as our transport policy. Railways can provide better connectivity and additional transport capacity to a potential development area, so that the liveability of the area can be enhanced and developments of a relatively higher intensity, which would otherwise overload the road-based public transport system, can materialise. The railway system would be supplemented by a variety of other public transport services. For instance, franchised buses and Light Rail serve as mass carriers and also provide feeder services to heavy rail. Public light buses provide feeder services and serve areas with relatively lower passenger demand or where the use of high-capacity transport modes is not suitable, while taxis offer point-to-point service for commuters who are willing

to pay a higher fare.

- 4.5 The railway projects recommended under RDS-2014 may not be adequate to cope with the additional traffic demands generated by the land use developments beyond 2031. In formulating the transport infrastructure in supporting any new SGAs, apart from the capacity concerns, due consideration should also be given to the possible enhancement to the overall network robustness and resilience.



- 4.6 Notwithstanding the vital role of the railway system in moving Hong Kong ahead, owing to the space or topographic constraints in some areas, and for addressing the transport needs of commercial and logistic activities, there is always a demand for road-based transport infrastructure. For the sake of

network connectivity and robustness, the need to provide new roads and improve existing highways in a timely manner should not be undermined.

### **Promoting Walking and Cycling**

- 4.7 The provision of walking and cycling facilities will be important in building an environmentally-friendly and people-oriented society and promoting low-carbon urban development. For the NT districts and the new NDAs, walking or cycling for short distance journeys, or for part of journeys can reduce the reliance on road-based transport modes and complement the use of mass transport.
- 4.8 Generally, the public are willing to walk longer with improved walking environments, such as under sheltered or air-conditioned corridors, and provision of travellers/escalators. Apart from the improvements to pedestrian facilities such as widening walkways and building footbridges/subways, provision of other appropriate pedestrian-friendly facilities at suitable locations may be considered in developing “vehicle free green” districts. Traffic calming measures may also be introduced in some streets where traffic conditions permit for safeguarding pedestrian safety.



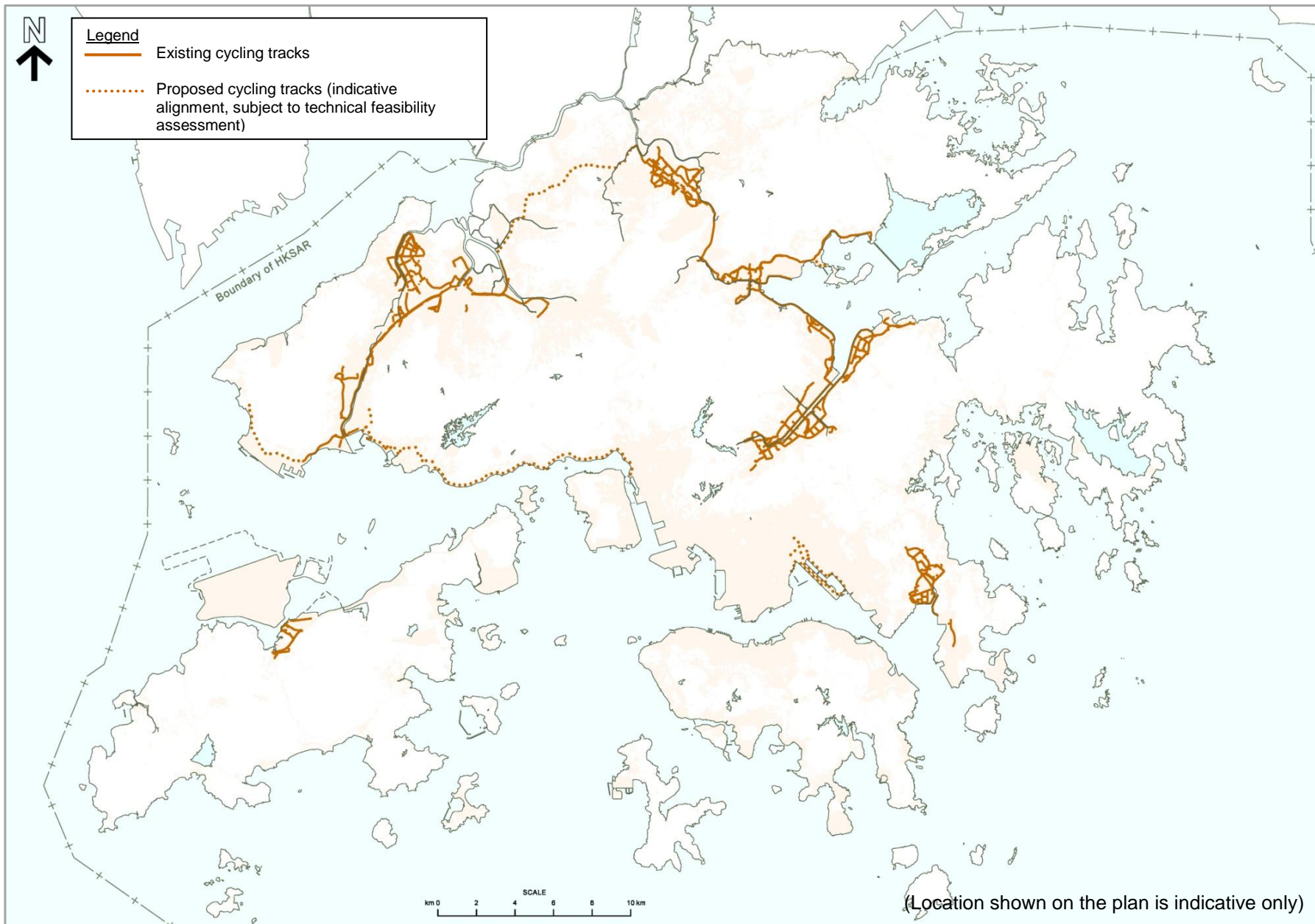
Central-Mid-Levels Escalator and Walkway System

- 4.9 To advocate a “walkable city” design concept, a directive for the Government in planning and improving pedestrian facilities is to enhance pedestrian safety and connectivity, promote walking as a transport mode and improve the overall walking environment. To this end, key pedestrian-oriented elements will be examined for incorporation in future development planning including, giving priority to pedestrian movements, providing direct and continuous walking facilities, and pedestrian-oriented designs and wayfinding.
- 4.10 As for cycling, the Government strives to foster a “bicycle-friendly” environment in new towns and NDAs. Hence, where situation permits, cycle tracks and ancillary facilities will be enhanced/provided in new towns and NDAs. In this regard, TD has commissioned a study to identify and devise improvements to existing cycle tracks and bicycle parking facilities in the nine existing new

towns. Besides, to promote cycling, a 82km long cycle track network in the NT, viz. a 60km main section between Ma On Shan in the east and Yuen Long/Tuen Mun in the west via Sha Tin, Tai Po, Fanling and Sheung Shui, and a 22km section from Tsuen Wan to Tuen Mun, is being implemented in phases. However, generally speaking, in the urban areas where designated and continuous cycle tracks cannot be made available, cycling alongside the busy traffic would have safety concerns. **Figure 7** shows the existing and proposed cycle tracks in Hong Kong.

- 4.11 To facilitate interchange from cycling to other transport modes, the Government has provided and will continue to provide bicycle parking spaces for public use at major transport hubs in various new towns. Furthermore, public transport operators are encouraged to allow the carriage of bicycles on board on condition that safety and passenger convenience would not be compromised. Improvement works to enhance the safety of cyclists and other road users will continue to be carried out.





**Figure 7 Existing and Proposed Cycle Tracks**

## **Managing Ownership and Fleet Size of Private Vehicles**

4.12 The PV growth rate is affected by a variety of factors, such as population growth, household growth, household income, PV price, currency fluctuations, economic performance, public aspirations, government policies and measures, etc. In the near term, there are no foreseeable factors or administrative measures that would effectively and substantially slow down the PV growth. On the other hand, the projected trend of slower growth in population and households, coupled with the increasing proportion of the aged, arguably suggest that the overall demand for PVs should lessen in the long run. Even if the demographic pattern changes and/or cleaner PVs are adopted in future, leaving the current level of PV growth unchecked in the long term would most certainly adversely affect the vision of Hong Kong as a liveable and compact high-density city and undermine the principle of sustainable development.

4.13 Railways would continue to be the backbone of the public transport system, supplemented by other modes of public transport, walking and cycling to reduce carbon footprint. Better use of public transport should be encouraged to reduce reliance on PVs. In this regard, there would be a need to take into consideration not only measures to manage PV growth, but also measures such as enhancing the aforementioned framework of the public transport services, bringing jobs closer to home, fostering smart and green mobility options, facilitating/promoting walking and cycling, etc. In other words, innovative solutions and proactive measures for the transport system, such as managing road use at appropriate

locations, enhancing mobility by means of advance transport technology, or increasing capacity through enhanced public transport services, could be explored alongside measures to optimise our spatial development pattern.

## **Managing Road Use**

4.14 Apart from reducing the demand on the limited road space by curbing PV growth, it is equally important to maximise the efficiency of limited road space. Congestion charging (or Electronic Road Pricing “ERP”) could be an effective way to manage road usage and to relieve congestion in designated area(s), in particular, the CBD by adopting the “user pays principle”. In this regard, the Transport and Housing Bureau, and TD carried out a public engagement exercise from December 2015 to March 2016 for planning an ERP pilot scheme in Central and its adjacent areas. Based on the views collected, the latest traffic data and overseas experience, the next stage of work will proceed, including conducting an in-depth feasibility study to formulate detailed pilot scheme options for further discussion by the public with the utmost objective of improving the traffic conditions in Central and its adjacent areas.

4.15 Other possible measures for managing road use were also recommended by the TAC in its “Report on Study of Road Traffic Congestion in Hong Kong” include,

- Increase meter parking charges;
- Adopt a stricter approach or impose heavier penalties

to enforce congestion-related offences;

- Encourage on-street loading and unloading activities outside peak hours (that could be factored in as one of the features of an ERP pilot scheme);
- Provide more park-and-ride facilities; and
- Review parking policy and disseminate real-time information on parking vacancies.

4.16 The Government has undertaken to implement the recommendations made by TAC in phases, having regard to stakeholders views, feasibility of available options and overseas experiences, etc. Some of them may necessitate legislative amendments. Their successful implementation and effectiveness would largely hinge on how different sectors of the community could join hands in tackling traffic congestion.

### **Transport Enhanced by Technology : Smart Mobility**<sup>11</sup>

4.17 The advancement and much broader use of information and communications technologies (“ICT”) have opened up great opportunities for more efficient and effective use of the transport system. At present, a wide range of web-based or mobile phone app-based traffic information services such as traffic speed map, journey time, live traffic cam, driving route search and navigation service,

public transport information service, transport booking service provided by the Government and various public and private organisations are being widely used by commuters to facilitate their travelling.

4.18 As a long-range planning initiative to promote “smart mobility”, application of innovative state-of-the-art Intelligent Transport Systems and ICT and other technologies shall be further investigated in future. Such applications generally cover two main aspects: (i) *transport infrastructure* and (ii) *traffic management and operation*.



Application of ICT in promoting “smart mobility”

<sup>11</sup> More discussion on the application of ICT in promoting “smart mobility” is given in another topical paper entitled, “A Smart, Green and Resilient City Strategy”.

4.19 Transport infrastructure involves the provision of environmentally-friendly rail or green mass transit modes; deployment of electric, or even driverless vehicles<sup>12</sup>; electric charging and/or induction charging infrastructure for vehicles; and integration with the public transport system. Off-street parking of PVs and bicycles will free up valuable space at-grade. Automated parking technologies such as parking location recording and licence plate number searching, can increase the efficiency of parking.

4.20 In the context of traffic management and operation, implementation of a traffic adaptive control system can effectively optimise the traffic signal controls in response to the traffic conditions thereby reducing traffic interruption and in-vehicle waiting time. In this connection, the TD has been implementing the Intelligent Transport Systems under two major areas, namely: “Smart Way to Travel” and “Smart Way for Safety and Efficiency”. Apart from Government’s efforts, the semi-public and/or private sector have also played a part in promoting “smart mobility”. For instance, the Mass Transit Railway Corporation Limited (“MTRCL”) has launched the *MTR Mobile App* to provide updates on its train schedule. This app facilitates train users to plan their journeys in advance, and simply by choosing the departing station, the app will provide the arrival time information for the next four trains<sup>13</sup>. Similar applications are also developed by other public transport

operators or app providers, such as the Kowloon Motor Bus which provides real-time bus arrival information at bus stops<sup>14</sup>.

4.21 To further promote the use of ICT for achieving smart mobility initiatives, it is important to bridge the digital divide within society. The creation of a cyber platform that can facilitate the sharing of real-time travel information on all kinds of transport modes inclusively should be explored. The Integrated Intelligent Public Transport System aims at providing real-time service information of multiple modes of public transport in a single platform. The information includes arrival time of selected public transport system at a particular location, allowing citizens to determine the preferred mode and route of public transport. Additionally, through the provision of real-time service information for both the road traffic conditions and the public transport services, an integrated intelligent transport system would help commuters determine the most convenient and preferred mode and route of transport to their destination with information on the time and/or cost spent on the trip. Also, immediate alert of traffic incidents such as road accidents or breakdowns of / delays to public transport services can help minimise the disruption so caused to commuters.

4.22 Furthermore, the latest information technology could be applied for streamlining traffic enforcement process. For instance, the use of e-ticketing for fixed penalty tickets and wider use of technology for traffic enforcement shall

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<sup>12</sup> The deployment of driverless vehicles should be subject to further demonstration that road safety can be maintained in the context of the traffic conditions in Hong Kong.

<sup>13</sup> MTRCL (2016) MTR Next Train App (2016).

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<sup>14</sup> The Kowloon Motor Bus (KMB) Company (2016) KMB and Long Win Smartphone App V2.

be further explored and developed.

- 4.23 Moreover, dissemination of real-time information on parking vacancies will not only enhance the efficiency of car park usage, but also reduce unnecessary traffic circulation in search of parking spaces and hence reduce local road traffic. TD has developed a common platform for disseminating parking information through the “Hong Kong eRouting” mobile app based on the information provided by private car park operators.
- 4.24 In pursuit of smart mobility initiatives, it is essential for opening up opportunities for the underprivileged groups to expand their horizons in the information society, it can also enable the smart measures to reach through and apply to a wider spectrum of society. For instance, to cater for the needs of the ageing population, TD is currently looking into the feasibility of installing smart devices at signalised crossings for extending the pedestrian crossing time for the elderly.

# 5

## POSSIBLE TRAFFIC AND TRANSPORT ARRANGEMENTS FOR THE STRATEGIC GROWTH AREAS

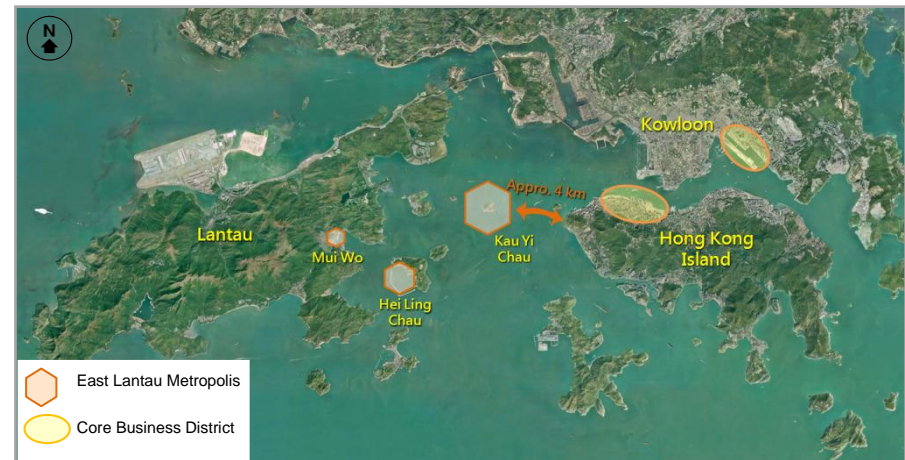
### Synopsis of Strategic Growth Areas

5.1 As set out in the Topical Paper on “Conceptual Spatial Framework”, the conceptual spatial framework<sup>15</sup> for Hong Kong 2030+ (Figure 8) comprises the following three key attributes:

- **One Metropolitan Business Core** around Victoria Harbour, covering the traditional CBD and Kowloon East CBD2 in the existing Metro Area and the proposed ELM – CBD3;
- **Two Strategic Growth Areas**, namely the ELM and the NTN; and
- **Three Emerging Development Axes** viz. Western Economic Corridor, Eastern Knowledge and Technology Corridor, and Northern Economic Belt.

<sup>15</sup> The major committed / under planning land supply included in the Conceptual Spatial Framework for Hong Kong 2030+ is as follows: 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, Lok Ma Chau 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.

5.2 The proposed ELM is broadly estimated to be about 1,000 ha (Figure 9). The basic concept of the ELM is to create artificial island(s) by reclamation in the waters near Kau Yi Chau (“KYC”) and the currently underutilised 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 and low-carbon development clusters including CBD3.



**Figure 9 Broad Location of the Proposed East Lantau Metropolis (For Indication Only)**

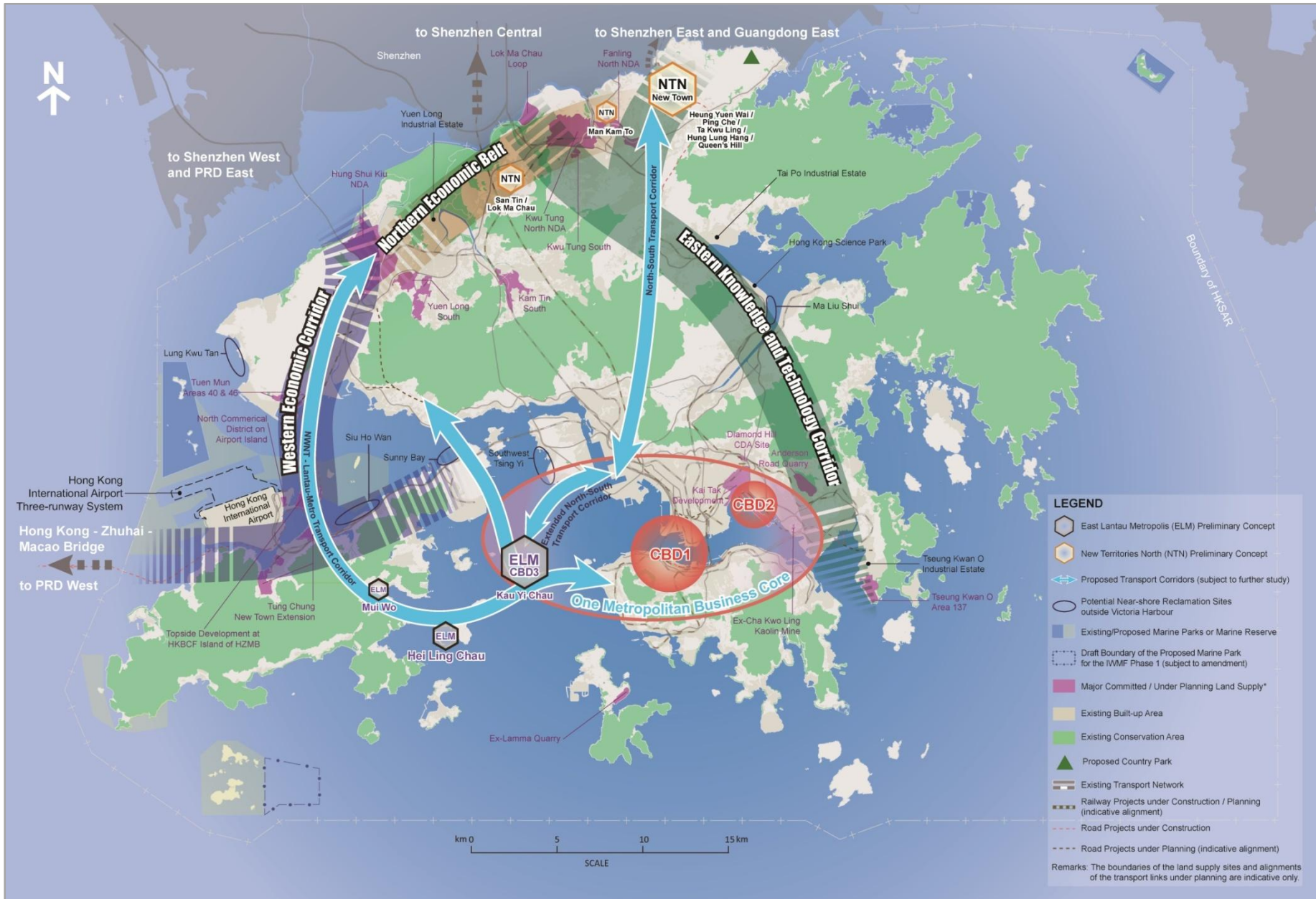


Figure 8 Conceptual Spatial Framework for Hong Kong 2030+

5.3 Depending on the development scale and density, the proposed ELM can accommodate a population in the range between 400,000 and 700,000. The ELM would include a CBD3 and an extended urban core near Hong Kong Island for providing long-term solution space for economic development. Being an attribute of the Metropolitan Business Core, CBD3 in the ELM is identified as a new economic and employment generation node for providing about of 200,000 job places outside the Metro Area with a view to redressing the current imbalance in home-job distribution.



**Figure 10 New Territories North Study Area**  
(For Indication Only)

5.4 The NTN (**Figure 10**) would cover a development area of about 720 ha, mainly through comprehensive planning and more efficient use of the brownfield sites and abandoned agricultural land in the NT. The target population would range from 255,000 to 350,000 (depending on the scenario to be adopted), with about 215,000 job places to be provided. The broad land use concept for the NTN would mainly comprise three potential development areas, viz. San Tin/Lok Ma Chau Development Node, Man Kam To Logistics Corridor and NTN New Town.

5.5 Please refer to the Annexes of the Public Engagement Booklet of Hong Kong 2030+ for the details of the preliminary concepts of the ELM and the NTN.

5.6 With their locational advantages, the two SGAs would act as a catalyst in fostering the “One-Two-Three” framework in the following aspects that were taken into consideration in formulating the strategic transport directions for the proposed ELM and NTN.

- (a) The two SGAs, providing sizeable employment places outside the Metro Area, will be closer to an **existing** pool of workforce<sup>16</sup> and **future** communities (e.g. Kwu Tung North, Fanling North and Hung Shui Kiu NDAs, and Tung Chung New Town Extension where there will be in-take of new population). These employment nodes outside the Metro Area can

<sup>16</sup> As illustrated in Figure 3, the NWNT and the NENT currently house about 33% of the population whereas only 18% of employment opportunities over the territory are found there.



reduce long distance cross-regional commuting trips; lower the corresponding travel time for work; relieve burden on the future transport network, and hence, enhance the sustainability of communities. Furthermore, reshaping travel patterns by reverting the metro-bound long distance traffic towards SGAs would make room for efficient use of any spare capacities available in the counter-peak direction of the transport system during peak hours.

- (b) Strategically located in proximity to the Western Economic Corridor, with appropriate supporting transport arrangements, the proposed ELM can convey a large pool of labour force in NWNT cum the future NDAs in the region to the employment opportunities in the existing CBD as well as the strategic economic developments along this Corridor (such as Airport North Commercial District, topside development at HKBCF Island of HZMB, and CBD3 at the ELM itself) where a considerable number of employment places are expected.
- (c) Currently, the eastern point of KYC is about 4km from Hong Kong Island West. With new strategic transport infrastructure, the ELM could be connected to the existing CBD conveniently and efficiently, hence reinforcing the existing business core around Victoria Harbour as well as creating and buttressing a new metro front in the territory.
- (d) Clustering of related industries at strategic and highly accessible locations favour promoting greater synergy and facilitating mutual growth of different economic land uses. The NTN will be at the

convergence of the Northern Economic Belt and the Eastern Knowledge and Technology Corridor. By capturing the new development opportunities to be brought by new transport infrastructure associated with NTN, it is opportune to promote agglomeration economies and create a viable business environment, as well as enhancing business efficiency/viability and economic performance along the foregoing Economic Belt and Technology Corridor, thereby, inducing greater synergy between the two corridors.

### **Strategic Traffic and Transport Directions**

- 5.7 Upon examination of the strategic positioning of the ELM and the NTN in the conceptual spatial development framework and with due consideration of the performance of existing and planned transport network as discussed in Section 3 above, broad strategic directions for the possible traffic and transport arrangements are formulated for the two SGAs.
- 5.8 While acknowledging the need for new strategic transport infrastructure and/or improvements to existing ones to support SGAs, in pursuit of the principle of “Transport and Land Use Optimisation” as discussed in Section 4, we should be cautious about expanding the transport network system to meet the transport needs of the respective SGA, and this should be recommended only after reviewing the room for making efficient use of the spare capacities in the network.
- 5.9 Apart from proposing sufficient transport capacities to meet SGA-related traffic demand that conventional traffic

impact assessments do, a forward-looking and vision-driven approach is adopted in the quest for a more balanced spatial distribution of traffic patterns over a longer time span.

5.10 The ensuing paragraphs give the traffic and transport directions for the two SGAs, taking into account the preliminary concepts formulated under the proposed development strategy for Lantau by the Lantau Development Advisory Committee<sup>17</sup> (“LanDAC”) and the recommendations of the “Preliminary Feasibility Study on Developing the New Territories North”<sup>18</sup> (“NTN Study”), respectively. Subject to the public views collected in the public engagement of the Hong Kong 2030+, further traffic assessments and technical investigations would be followed up, where appropriate, in order to refine the transport proposals.

### ***The ELM***

5.11 Since KYC and HLC are currently lacking in land transport connections externally and the external accessibility of MW is also limited, substantial transport infrastructure would be required to support the developments. The proposed strategic traffic and transport initiatives are intended to bring multiple benefits not only to serve the SGA itself, but also to enhance the

transport network in a wider regional context:

- (a) to better integrate the CBD3 with the Metropolitan Business Core;
- (b) to strengthen the linkage between the NWNT, Lantau and the Metro Area so as to foster economic interactions among these areas and bring labour force to HKIA, new developments on Lantau and the proposed CBD3;
- (c) to support the development of the Western Economic Corridor with a new regional economic hub in Hung Shui Kiu NDA and new strategic economic centres in North Lantau to seize the opportunity associated with the regional gateway and bridgehead economy around HKBCF Island;
- (d) to enhance external connectivity of Lantau to unlock its development potential;
- (e) to improve the internal connectivity among the key components of the ELM and those major developments at North Lantau; and
- (f) to enhance the resilience of the accessibility of the HKIA, Lantau and NWNT.

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<sup>17</sup> The Chief Executive announced in the 2014 Policy Address the establishment of the LanDAC with a view to advising the Government on the opportunities brought by various major infrastructure proposals in Lantau, as well as the synergy effects of Hong Kong and the PRD, and to formulate an overall economic and social development strategy for Lantau in balancing development and conservation.

<sup>18</sup> The NTN Study was jointly commissioned by the PlanD and the CEDD in early 2014.

## ***The NTN***

- 5.12 The NTN would be accessible via existing and proposed transport infrastructure in the northern NT (please refer to **Figure 5**). The development potential is however subject to a number of factors including (i) the capacities of ERL/Tolo Highway for the eastern part of NTN, (ii) the capacities of WRL/San Tin Highway and Tai Lam Tunnel for the western part of NTN, and (iii) overall accessibility, internally and externally, in the northern NT.
- 5.13 In view of the above, the development of the NTN will be substantially affected by its transport connectivity with the Metro Area. Any substantial traffic and transport demands generated by the NTN to the Metro Area would put immense pressure on the already congested transport network in the north-south direction. Therefore, the utmost importance of sustaining the NTN as a whole is to provide an alternative approach to planning for a balanced mix of developments in the NTN with ample opportunities for economic and employment generation developments, and to be supplemented by assessing the need for, and feasibility of, providing new transport infrastructure between the NTN and the Metro Area to cater for the additional traffic/transport demands. In so doing and by maximising the self-containment of the future NTN, the long distance commuting between the NTN and the Metro Area could be reduced, thereby minimising the burden imposed on the existing and proposed transport network.
- 5.14 In consideration of the foregoing factors and the findings of the NTN Study, the traffic and transport initiatives for the NTN should be directed:

- (a) to support the 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) to fortify the integration between the Eastern Knowledge and Technology Corridor and the Northern Economic Belt with more efficient transport connections;
- (c) to grasp the opportunities of the improved accessibility associated with the future LT/HYW BCP and its connecting road; and
- (d) to optimise the development opportunities along the proposed Northern Link corridor.

## **Possible Traffic and Transport Arrangements**

### ***The ELM***

- 5.15 Given the potential population and employment opportunities at the proposed ELM and its CBD3 function, it is crucial to connect the ELM with the existing urban districts through a strategic transport network. Subject to further detailed study, the railway would be considered as the backbone for the **NWNT-Lantau-Metro Transport Corridor**, which is identified as the long-term transport network for the ELM, so as to facilitate the external and internal accessibility of this SGA.

5.16 As far as railway connection is concerned, a new rail line connecting KYC with the Metro Area at Hong Kong Island West would accommodate the external public transport needs for the ELM. This rail would also promote better integration between the CBD3 with the Metropolitan Business Core. Internally, the westward extension of this new rail line would link up KYC with HLC and MW for promoting coherence and synergies among the three clusters.

5.17 To open up further opportunities for blending in with the developments in the North Lantau, the catchment of the new rail line might be expanded by extending the western end at Mui Wo to the North Lantau and further to HKBCF Island of HZMB. This rail extension proposal would not only foster coherence between the ELM and the regional transport hub at HKIA/HZMB BCP but also improve the connectivity of Tung Chung new town with other parts of Hong Kong.

5.18 In the long term, it would be desirable to explore possibility of the further northward railway extension to the NWNT. This vision-driven rail loop is strategically important by providing an alternative railway route from NWNT to the Metro Area and is anticipated to alleviate the congestion along WRL, subject to more detailed technical assessments. It would be more efficient in connecting the population and employment centre in the Western Economic Corridor and achieving a better balance between homes and jobs.

5.19 Subject to transport need and detailed study, the proposed railway 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 the economic activities along the Western Economic Corridor (including the proposed ELM and North Lantau developments), but 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.

5.20 The proposed highway infrastructure would connect the main components of the ELM and bring them closer to the Metro Area, the NWNT and the other parts of the Lantau. This proposed new highway would connect the ELM with Hong Kong Island West; with Kowloon and HKIA/Tung Chung via Lantau Link and North Lantau Highway respectively, and with the NWNT via future Route 11 under planning. This north-south running highway would enable the metro-bound traffic from the NWNT and the ELM to bypass the busy road corridors at the two sides of Victoria Harbour, particularly the approach roads leading to the road harbour crossings.

5.21 Depending on the development scale of the ELM, a further extension of the highway infrastructure connecting the main components of ELM to North Lantau could be provided where traffic would make use of the existing North Lantau Highway for HKIA, HZMB HKBCF and Tung Chung and the future TM-CLKL and TMWB for access to the NWNT. With its proximity to the HKIA and HZMB BCP and its topside development, this long-term potential highway connection would promote coherence of the ELM in seizing the opportunities associated with the

regional gateway and bridgehead economy around the regional transport hubs there. In a wider regional context, the road system could further connect with Shenzhen, the PRD Region and Guangdong West through Shenzhen Bay BCP in the north and the future HZMB in the west.

- 5.22 The above highway provisions would serve multiple purposes of not only accommodating the traffic needs of the ELM but also improving the operating performance of existing highway corridors from NWNT/ North Lantau to Hong Kong Island, including Tuen Mun Road, West Kowloon Highway, and Lantau Link. In fact, as the proposed highway connection is literally the fourth road harbour crossing, the anticipated congestion at the three existing road harbour crossings would be relieved despite an overall increase in the cross-harbour traffic with the addition of the ELM traffic.
- 5.23 Strategically located within the Metropolitan Business Core and situated in proximity to the Western Economic Corridor, and with provision of a considerable number of employment places in CBD3, the ELM with the above proposed conceptual transport network would effectively convey the labour force in the NWNT to the employment opportunities in the Metropolitan Business Core as well as the strategic economic developments along this Economic Corridor (such as Airport North Commercial District, topside development at HKBCF of HZMB, and CBD3 at the ELM itself). Also, major re-distribution of traffic patterns is anticipated as some of the commuting trips would be attracted to the ELM instead of the Metro Area. This could bring relief to the existing congested highway and railway corridors in the peak direction.

- 5.24 In sum, the proposed railway and highway arrangements presented above would serve multiple purposes of not only accommodating the traffic needs of the ELM, enhancing the operational performance of existing transport network between NWNT/North Lantau and Hong Kong Island, the NWNT-Lantau-Metro Transport Corridor associated with the ELM would also support the Western Economic Corridor and improve the overall connectivity of the western part of Hong Kong at both the local and regional level.

### ***The NTN***

- 5.25 In view of the traffic concerns along the existing north-south running transport links between the NENT and the Metro Area, and given the limited scope of further improving the capacities of the existing transport infrastructure (such as highway widening), a new **North-South Transport Corridor** connecting the eastern part of the NTN to the existing transport network would be required. This new transport corridor would not only enhance the accessibility and transport capacity serving the NTN, but also alleviate the anticipated traffic congestion in the region. The mode, connection points, configuration and alignment of this transport corridor will be examined further according to the development scale of this SGA and is subject to further detailed studies.

5.26 Given the maximum employment of about 215,000 job places, the more balanced population/employment scenario with a relatively lower population level (of about 255,000) would increase the ratio of employment places that indeed reduce the need for resident workers in the NTN and other districts in the northern NT to commute to the Metro Area. Some metro-bound commuting trips arising from the northern NT would be attracted to the work places to be provided in the NTN instead, and would help reshape the travel patterns. It is anticipated that the peak hour traffic conditions would not be worsen under this development scenario. Besides, the average distance of travel by commuters would be reduced accordingly for achieving work-life balance. However, the ultimate phase of development under the scenario with more population (350,000) would inevitably increase traffic loading of the existing strategic highways. Hence, the north-south road linkage would need to be improved under this scenario. In sum, the transport infrastructure required to support the “balanced population” scenario of the NTN would be relatively smaller in scale and be more efficient as compared with the scenario with a higher population.

5.27 As for the potential development areas in the western part of the NTN, it is opportune to make use of the proposed Northern Link by introducing possible intermediate station(s) near the NTN along this new rail line. By doing so, public transport demand for the NTN in the west would generally be addressed. Depending on the scale of NTN development and subject to further study, a new railway scheme would be required to support NTN development in the east.

5.28 Should both the ELM and the NTN be taken forward and depending on the respective development scale, the conceptual North-South Transport Corridor could be further extended south-westward to the ELM, with an interchange at an appropriate location in the Kowloon West, which would be desirable for enhancing the connectivity between the two SGAs and synergising the development effects. The **extended North-South Transport Corridor** would greatly enhance the connectivity between the NENT and the Kowloon West where travellers would enjoy a shorter and faster route via this corridor instead of the existing busy links. Apart from the above merits, this extended North-South Transport Corridor would also alleviate the crowdedness of the existing/planned transport infrastructure and enhance robustness of the entire transport system as a whole.

## ENDNOTES

1. Planning Department (2014), *Cross-boundary Travel Survey 2013/14*.
2. Transport Advisory Committee (2014), *Report on Study of Road Traffic Congestion in Hong Kong*.
3. Transport and Housing Bureau, HKSAR Government (2014), *Railway Development Strategy 2014*.
4. Transport Department, HKSAR Government (2014), *Travel Characteristics Survey 2011*.
5. Census and Statistics Department, HKSAR Government (2015), *Hong Kong Population Projections 2015-2064*.
6. Transport Department, HKSAR Government (2016), *Annual Traffic Census 2015*.
7. Hong Kong Fact Sheets 2016
8. MTRCL (2016), Business Overview  
[http://mtr.com.hk/archive/corporate/en/publications/images/business\\_overview\\_e.pdf](http://mtr.com.hk/archive/corporate/en/publications/images/business_overview_e.pdf)