

**For discussion
on 16 June 2017**

Legislative Council Panel on Transport

“Strategic Studies on Railways and Major Roads beyond 2030”

PURPOSE

This paper seeks Members’ views on the funding application for the “Strategic Studies on Railways and Major Roads beyond 2030” (“the Study”).

BACKGROUND

2. The Development Bureau and the Planning Department jointly commissioned the planning study, “Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030” (“Hong Kong 2030+”) in 2015 to formulate a robust spatial planning framework by adopting a visionary, pragmatic and action-oriented approach, and to guide the planning, land and infrastructure development, construction, and the shaping of the natural environment of Hong Kong beyond 2030¹. A 6-month public engagement exercise of the Hong Kong 2030+ Planning Study was conducted from October 2016 to April 2017, to collect views from the public particularly on the proposed three building blocks and a conceptual spatial framework (see **Plan 1**). The three building blocks are “Planning for a Liveable High-density City”; “Embracing New Economic Challenges and Opportunities”, and “Creating Capacity for Sustainable Growth”, while the conceptual spatial framework proposes the focus of the future development of Hong Kong within a metropolitan business core, two strategic growth areas (“SGAs”) (i.e. East Lantau Metropolis (“ELM”) and New Territories North (“NTN”)) and three primary development axes (i.e. Western

¹ Since the 1970s, the Government has reviewed the territorial development strategy around every decade to embrace new needs and expectations. The last review, “Hong Kong 2030: Planning Vision and Strategy”, was promulgated in 2007, which provided the broad directions on land supply and town planning of Hong Kong up to 2030.

Economic Corridor, Eastern Knowledge and Technology Corridor and Northern Economic Belt); and at the same time conserves natural assets and enhances our livability. For more background information, please refer to <http://www.hk2030plus.hk>.

3. There are two key strategic directions on traffic and transport planning proposed by the Hong Kong 2030+ Planning Study. First, to meet the need for long term economic and social developments of Hong Kong including the two SGAs of ELM and NTN, new strategic transport infrastructures should be provided and the existing facilities should be improved (see the proposed transport corridors shown in **Plan 1**). Railways will continue to be the backbone of the public transport system, complemented by other public transport modes, walking, cycling and other low-carbon transport modes. Second, the traffic demand has to be managed properly, including optimising the spatial distribution of population and jobs when developing the two SGAs (i.e. E&M and NTN), and clustering population and economic activities within the coverage of public transport nodes, in order to reduce the use of vehicles, particularly the private cars.

4. Planning Department's consultants are now analysing the views collected from the public engagement exercise and will carry out further technical assessments to formulate the final recommendations of the territorial development strategy for Hong Kong. The Hong Kong 2030+ Planning Study is scheduled for completion in 2018.

5. We are now constructing and planning various transport infrastructures to support the planning of new development areas and extension of new towns; with the aims to supporting their external connectivity on one hand and to alleviating the existing and potential bottlenecks as well as to enhancing the coverage of the existing transport network on the other hand. The railways under construction include the Shatin to Central Link and the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link; while the major roads under construction include the Central - Wan Chai Bypass and Island Eastern Corridor Link, Tuen Mun-Chek Lap Kok Link, Connecting Road from Fanling Highway to Liantang/Heung Yuen Wai Boundary Control Point, Tseung Kwan O - Lam Tin Tunnel of Route 6 and the Hong Kong Section of Hong Kong-Zhuhai-Macao-Bridge. Moreover, there are seven

railway projects under planning recommended in the “Railway Development Strategy 2014” including Northern Link and Kwu Tung Station, Hung Shui Kiu Station, Tung Chung West Extension, Tuen Mun South Extension, East Kowloon Line, South Island Line (West) and North Island Line; while the major roads under planning include Central Kowloon Route, T2 Trunk Road and Tseung Kwan O Cross Bay Link of Route 6, Tuen Mun Western Bypass and Route 11. The layout of the existing railways and major roads under construction and planning is shown in **Plan 2**. Overall, apart from a few longer term projects, the above-mentioned projects will have formed the transport infrastructure blueprint up to 2031.

6. In July 2015, the Transport and Housing Bureau briefed the Members of this Panel the planning of transport infrastructure in the Northwest New Territories (“NWNT”) (please refer to LC Paper CB(4)1306/14-15(04) for details). As mentioned in the LC Paper, upon completion of the three new railway projects recommended in the “Railway Development Strategy 2014” (i.e. Northern Link and Kwu Tung Station, Tuen Mun South Extension and Hung Shui Kiu Station) by 2031, the West Rail Line (“WRL”) will be able to meet the demands during the peak hours (around 8 am to 9 am) at the busiest section of the WRL (i.e. from Kam Sheung Road Station to Tsuen Wan West Station) with the trains slightly congested². We further mentioned in the LC Paper that we would bid for resources and commence studies for improving the carrying capacity of the heavy railways in the NWNT beyond 2031.

7. Since transport infrastructure projects involve complex engineering and are of large scale, from the early planning stage till commissioning, in general it takes more than ten years to carry out the necessary investigation³, detailed design⁴ and construction⁵ with reference to the past experience in

² The stations and train compartments of the existing railway lines (including the WRL) were designed according to the safety standard at the time of their construction (i.e. six persons per square metre). As we pointed out in the “Railway Development Strategy 2014”, when allowed by resources and other related factors, a service benchmark of four persons per square metre in train compartments will be adopted in the planning of the new railway lines. As for the existing railway lines (including the WRL) or their extension, the service level will still be subject to the infrastructural constraints of the existing railway lines, such as the signaling system and the shortest platform of a railway line.

³ Investigation stage covers preliminary design, consultation of stakeholders, carrying out environmental impact assessment and applying Environmental Permit according to Environmental Impact Assessment Ordinance (Chapter 499), gazettal and applying for authorization of the associated works according to Roads (Works, Use and Compensation) Ordinance (Chapter 370) or Railway Ordinance (Chapter 519), etc.

⁴ Detailed design stage covers detailed design, land resumption and handling the associated compensation, preparation of contract documents and tendering, etc.

taking forward large-scale transport infrastructure projects. To ensure that the large-scale transport infrastructure can support the needs for land use development, it is necessary to commission the visionary strategic studies on railways and major roads beyond 2030 as soon as possible.

STUDY OBJECTIVES

Planning for Traffic Needs beyond 2030

8. Apart from the two SGAs (i.e. ELM and NTN) recommended by the Hong Kong 2030+ Planning Study, the continual growth of population and the economic developments in Hong Kong will also generate corresponding transport needs. We propose to examine the performance of the transport infrastructure in Hong Kong between 2031 and 2041 in this Study, based on the latest planning information available (up to 2041). Where potential bottlenecks due to the change in the overall development are identified, we will recommend relevant transport infrastructure projects or road improvement measures wherever practicable.

9. In view of the traffic demand brought by future population growth in the NWNT, we are also seeking approval from the Legislative Council on the funding application for the feasibility study on Route 11. The feasibility study on Route 11 does not fall within the scope of the “Strategic Studies on Railways and Major Roads beyond 2030” covered by this paper. However, both studies will be carried out in coordination. Subject to the findings of the feasibility study, Route 11 can improve the traffic conditions at Tuen Mun Road, Tai Lam Tunnel and Ting Kau Bridge, etc. during peak hours and relieve the traffic for the external connection of the NWNT. On the other hand, in view of the crowdedness of WRL, exploring improvement schemes for WRL would be one of the main objectives of this Study. According to the latest forecast of the Planning Department, there would be a significant growth in population in the NWNT beyond 2030. We shall focus on the loading of the heavy rails in the NWNT beyond 2030 according to the planning data up to 2041. Based on the forecast demand, we will carry out studies on whether it is necessary to construct a new heavy rail to directly connect NWNT to urban areas.

⁵ Construction stage covers actual construction, testing and commissioning, handing over the completed works to the relevant management and maintenance parties, etc.

10. Based on the findings of the Hong Kong 2030+ Planning Study which will be completed in 2018, we need to study the corresponding transport infrastructure for supporting the recommendation on the strategic land use planning, especially the two SGAs (i.e. ELM and NTN) probably be implemented in the longer term. We will study the layout of the proposed railway and major road infrastructure; and carry out preliminary engineering technical review on the route alignment and associated infrastructures, in order to ensure that the planning of large-scale transport infrastructures can meet the needs of long term overall land use developments. We will also examine the impact of the proposed transport infrastructure on the existing transport network to formulate relevant transport strategies.

Updating “Railway Development Study Model”

11. By applying transport models with latest planning data from time to time, the Transport Department and the Highways Department forecast the transport demands and examine the development of transport infrastructures in Hong Kong such as updating the need, scale and implementation programme of each of the proposed large-scale transport infrastructure project. The “Railway Development Study (RDS) Model” of the Highways Department is a transport computer model for railway patronage forecast. The model can produce railway patronage forecast with different planning and economic assumptions, including population and employment data, economic growth situation, land use, transport infrastructure planning and traffic data. As the current model has been in use since its last update in 2011, in order to enable the computer model to provide robust and reliable forecast, we consider it necessary to update and enhance the current RDS Model under this Study in accordance with the latest planning data and changes in socio-economic assumptions. Transport Department has completed in early 2015 the update and enhancement of their “Comprehensive Transport Study Model” and therefore, no further update is required in this Study.

12. Overall, this Study will base on the latest planning data in Hong Kong to examine the transport needs of the whole territory beyond 2031 holistically. It will study the necessary strategic transport infrastructure

network for meeting the traffic needs of the SGAs on one hand, while improving the traffic conditions of the existing transport corridors on the other hand. We propose to take forward the funding application as well as the consultants selection and appointment so as to commence the Study at the earliest. Subject to the final recommendations of the Hong Kong 2030+ Planning Study in 2018, in particular the development scale of the two SGAs (i.e. ELM and N TN), necessary adjustment will be made in the Study for formulating the transport infrastructure framework as a basis for future follow-up studies.

STUDY SCOPE AND NATURE

13. The scope of the Study comprises –.

Railways Section:

- (a) Based on the planning data up to 2041, to review the performance of the whole railway network from 2031 to 2041 in the absence of the SGAs, including the WRL, and to recommend necessary measures to meet future transport demands. The study scope includes forecast of railway passenger demand; assessment of the territorial railway network performance; preliminary assessment on the engineering feasibility of different railway options (including enhancing or improving existing railway lines, or even constructing new railways); and preliminary recommendations on the implementation strategy. In addition, as regards new railways proposals, preliminary studies on engineering planning, geotechnical assessment based on existing ground investigation information, strategic environmental assessment, economic and financial analysis will be carried out.
- (b) To conduct the strategic study on railways based on the recommendation on the development of the two SGAs (i.e. ELM and NTN) under the Hong Kong 2030+ Planning Study. The study scope includes: forecast of railway passenger demand based on the planning data corresponding to the above recommendation, assessment of the performance of the railway network related to the two SGAs, review of the layout of the railway infrastructures

related to the two SGAs based on the strategic land use planning recommendation proposed by the Hong Kong 2030+ Planning Study and recommendations of the proposed route alignment and associated infrastructures by conducting preliminary engineering technical review. Other scope of the study including engineering planning, geotechnical assessment based on existing ground investigation information, strategic environmental assessment as well as the economic and financial analysis of the proposed railway infrastructures shall be subject to the planning data and information of the two SGAs to be provided under the Hong Kong 2030+ Planning Study.

- (c) To update and enhance the current RDS Model of the Highways Department, including the model calibration and baseline analysis;

Major Roads Section:

- (d) Based on the latest planning data up to 2041, to review the future traffic conditions of the major roads in Hong Kong from 2031 to 2041 in the absence of the SGAs; to recommend corresponding major roads projects or road improvement measures; and to assess the priority of the proposals. For these proposals, preliminary assessment on the engineering feasibility studies on route alignment, engineering planning, geotechnical assessment based on existing ground investigation information, strategic environmental assessment, economic and financial analysis will be carried out to take forward the proposals.
- (e) To conduct the strategic study on major roads based on the recommendation on the development of the two SGAs (i.e. ELM and NTN) under the findings of the Hong Kong 2030+ Planning Study. The study scope includes: forecasts of traffic demands based on the planning data corresponding to the above recommendation, assessment of the performance of the major roads and road network related to the two SGAs, review of the layout of the major roads infrastructures related to the two SGAs based on the strategic land use planning recommendation proposed by the Hong Kong 2030+ Planning Study and recommendations of the proposed route alignment and associated

infrastructures by conducting preliminary engineering technical review. Other scope of the study including engineering planning, geotechnical assessment based on existing ground investigation information, strategic environmental assessment as well as the economic and financial analysis of the proposed major roads infrastructures shall be subject to the planning data and information of the two SGAs to be provided under the Hong Kong 2030+ Planning Study.

14. In view of the complex nature of the Study involving various areas of expertise, including analysis of transport network performance, technical assessment of transport infrastructures, complicated programming and calibration of railway transport computer models, etc., we recommend the employment of consultants to conduct this Study.

15. Subject to the approval of funding by the Finance Committee, we plan to commence the consultants selection and appointment in end 2017/early 2018. Highways Department plans to commence the railways section of the Study in the second quarter of 2018 for completion by the third quarter of 2021 (about 38 months) while the Transport Department plans to commence the major road section of the Study in the second quarter of 2018 for completion by the end of 2020 (about 27 months).

FINANCIAL IMPLICATIONS

16. We estimate the cost of the Study to be \$92.4 million (in money of the day prices), with breakdown as follows –.

		\$ thousand
(a)	Railways Section	64,900
	(i) Strategic Study on Railways beyond 2030 – Other Railways outside SGAs (i.e. ELM and NTN)	33,000
	(ii) Strategic Study on Railways beyond 2030 – SGAs-related Railways (i.e. ELM and NTN)	24,000

		\$ thousand
	(iii) Update and Enhancement of RDS Model of the Highways Department	2,000
	(iv) Contingencies [10% of Items (a)(i) to (a)(iii)]	5,900
(b)	Major Roads Section	27,500
	(i) Strategic Study on Major Roads beyond 2030 – Other Major Roads outside SGA (i.e. ELM and NTN)	20,000
	(ii) Strategic Study on Major Roads beyond 2030 – SGAs-related Major Roads (i.e. ELM and NTN)	5,000
	(iii) Contingencies [10% of Items (b)(i) to (b)(ii)]	2,500
	Total	92,400

17. We anticipate to phase the expenditure as follows –

Year	\$ thousand
2018-19	21,700
2019-20	33,700
2020-21	26,600
2021-22	10,400
	92,400

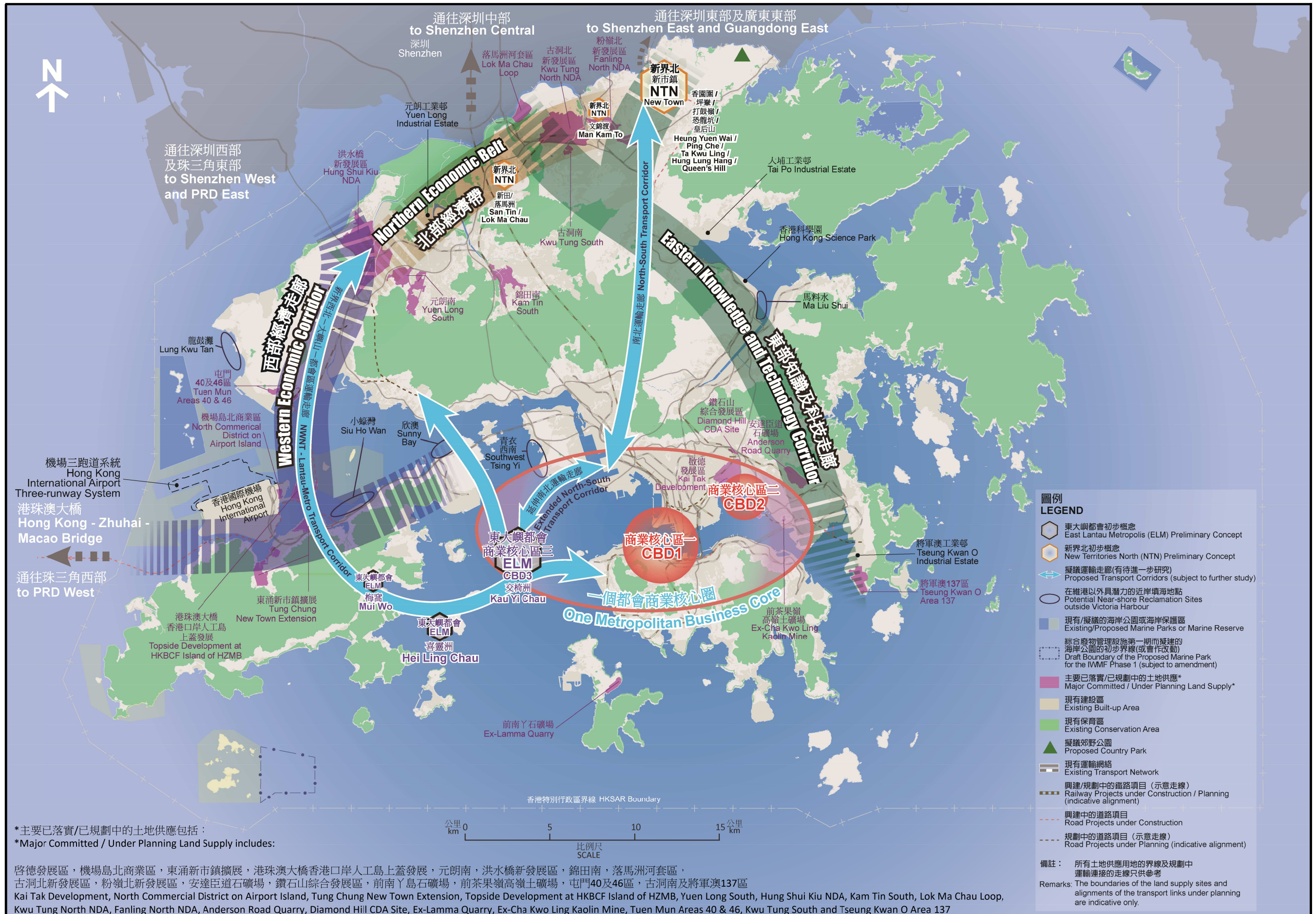
WAY FORWARD

18. We will subsequently seek funding approval from the Finance Committee. If the funding application is approved by the Finance Committee, we will commence the consultants selection and appointment as

soon as possible, so as to timely formulate the strategies for meeting transport demands beyond 2030 and to ensure that the large-scale transport infrastructure can support the future needs of the land use developments.

**Transport and Housing Bureau
Highways Department
Transport Department**

June 2017

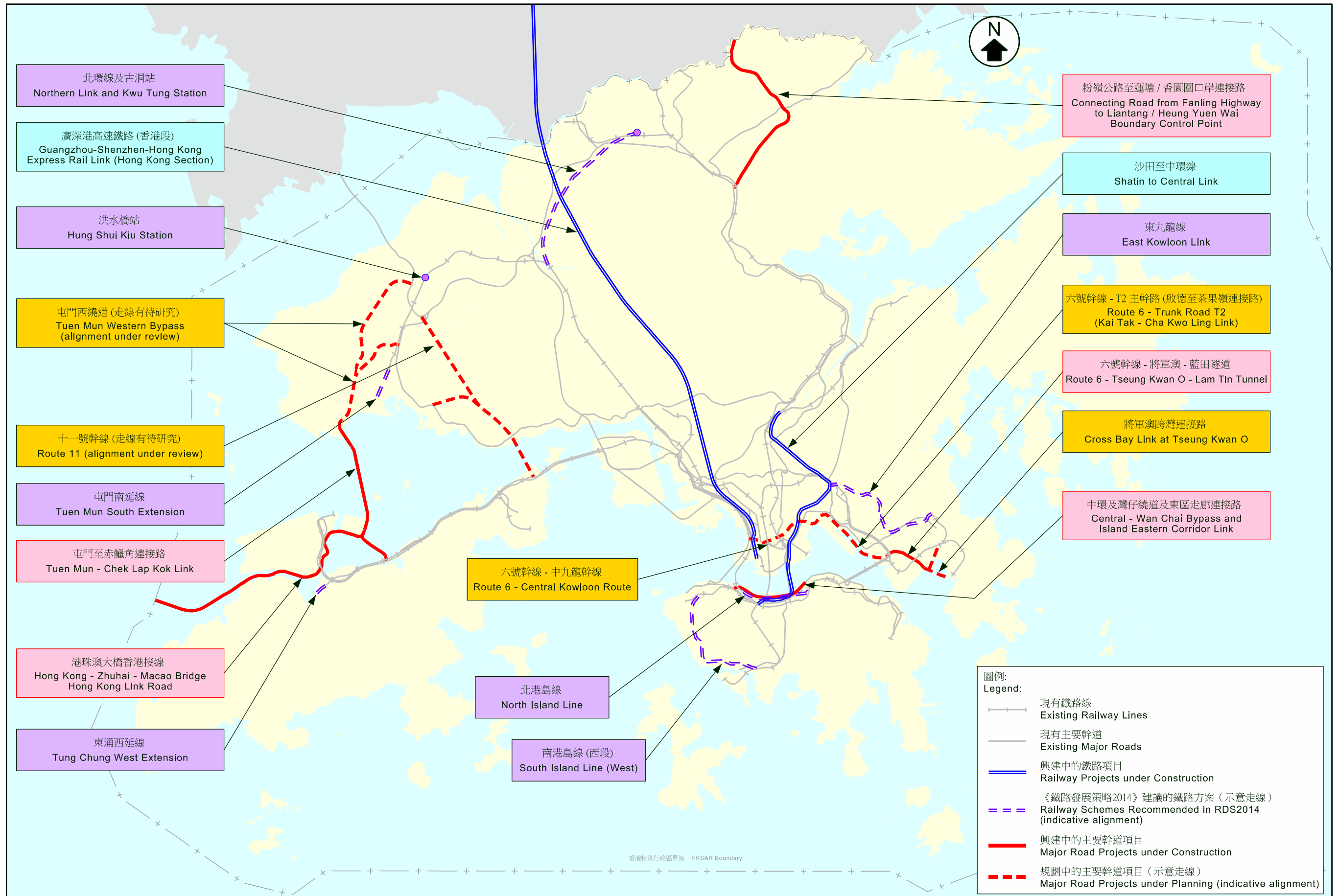


*主要已落實/已規劃中的土地供應包括：
 *Major Committed / Under Planning Land Supply includes:

啓德發展區, 機場島北商業區, 東涌新市鎮擴展, 港珠澳大橋香港口岸人工島上蓋發展, 元朗南, 洪水橋新發展區, 錦田南, 落馬洲河套區, 古洞北新發展區, 粉嶺北新發展區, 安達臣道石礦場, 鑽石山綜合發展區, 前南丫島石礦場, 前茶果嶺高嶺土礦場, 屯門40及46區, 古洞南及將軍澳137區, 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

香港2030+的概念性空間框架
 Conceptual Spatial Framework for Hong Kong 2030+

圖一
 PLAN 1



現有、興建中及規劃中的鐵路及主要幹道
 Existing Railways and Major Roads, and those under Construction and Planning

圖二
 PLAN 2