

**Legislative Council Panel on Transport
Subcommittee on Matters Relating to Railways**

Tung Chung Line Extension

(Translation)

Introduction

This paper briefs Members on the proposed way forward of Tung Chung Line (TCL) Extension project.

Background

2. The TCL Extension project is one of the seven recommended railway schemes in the Railway Development Strategy 2014 (RDS-2014). The TCL Extension mainly comprises Tung Chung West (TCW) Extension and Tung Chung East (TCE) Station. The TCW Extension is a 1.3-kilometre long extension from the existing Tung Chung Station of TCL to a new station at the TCW area; while the TCE Station is a new intermediate station between the existing Sunny Bay Station and Tung Chung Station of TCL.

MTRCL's Proposal for TCL Extension

3. Upon invitation of the Transport and Housing Bureau (THB) in January 2017 to take forward the TCL Extension using the ownership approach¹, MTR Corporation Limited (MTRCL) submitted a Project

¹ After the Rail Merger in 2007, there are two approaches for implementing railway projects, namely the ownership approach and the concession approach as stipulated in the Operating Agreement signed between the Government and MTRCL. Under the ownership approach, MTRCL will be responsible for the funding, design, construction, operation and maintenance of the new railway, and will ultimately own the railway. For financially non-viable railway projects, the Government will provide funding support to bridge the funding gap. Upon receipt of the funding support, MTRCL would bear all the commercial risks associated with the design, construction, operation and maintenance of the new railway. The Government has no obligation to provide any further funding support to MTRCL even if the future revenue arising from the new railway turns out to be substantially lower than expected. Under the concession approach, the construction of a railway project will be funded by the Government under the Public Works Programme. MTRCL will operate the new railway through a service concession to be granted by the Government, or a third party in or to whom the Government has vested or leased such new railway (such as the Kowloon-Canton Railway Corporation, as in the case of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link).

A Proposal in January 2018, with the railway scheme shown at **Annex A**. In its Project Proposal, MTRCL also proposed to construct the remaining section of the Airport Railway Extended Overrun Tunnel (AREOT) of about 460-metre at the east of Hong Kong Station in order to enable TCL and the Airport Express Line (AEL) to achieve their maximum design capacities. Issues related to AREOT are outlined in paragraphs 8 to 9 below.

Transport and Economic Justifications

4. The main function of TCL Extension is to serve the TCW area and the new developments in TCE area, which are collectively referred to as the Tung Chung New Town Extension (TCNTE). TCNTE is one of the important, medium-to-long term sources of land supply to meet Hong Kong's housing, economic and social needs. The TCNTE project mainly involves reclamation of about 130 hectares (ha) at the TCE area in support of an additional planned population of 126,000, of which the first population intake is 2024. For TCW area, the existing population in Yat Tung Estate and other housing developments commissioned or under construction is about 56,000, while the development under planning will generate a further population of about 26,600 by 2030. The TCL Extension project, including the two proposed stations, will offer direct railway access to the TCNTE in support of the long-term, sustainable growth in population and employment opportunities in that area.

5. The economic benefits accrued to transport infrastructure is generally measured in terms of time saving to road users. According to the Project Proposal and the supplementary information submitted by MTRCL, the Economic Internal Rate of Return² (EIRR) of the TCL Extension including the AREOT and the associated protection works is about 3.9% per annum. It is estimated that the TCL Extension will save the public a cumulative total of about 792 million hours over 50 years of operation. The economic benefits, including time saving, public transport vehicle operating cost savings, and accident cost savings over 50 years of operation, of the TCL Extension are estimated to be about \$61.4

² The transport economic benefit of three components including passenger time saving, public transport vehicle operating cost savings and accident cost savings have been quantified for calculating the rate of return, at which the net present value of all the cash flow of the project (i.e. costs and benefits) equals zero.

billion in 2016 prices.

Interface with the TCNTE Project

6. The TCE Station will be located at the reclamation area at TCE. The relevant reclamation works, undertaken by Civil Engineering and Development Department (CEDD), commenced in end December 2017. In the detailed planning and design stages, MTRCL will deepen the discussion with the relevant departments including CEDD, Highways Department (HyD) and Transports Department for the resolution of interfacing issues such as site handing over schedules, provision of accesses, coordination of works areas, provision of road-based public transport, etc.

7. The first batch of new population at TCE area, amounting to around 31,000³ public housing residents, is expected to move in starting from early 2024. About 50% (i.e. about 63,000 out of 126,000) of the new population of TCE would move in by end 2028. Before the commissioning of the TCL Extension, the Government would endeavour to provide appropriate road-based public transport services to satisfy the need of the community.

Airport Railway Extended Overrun Tunnel (AREOT)

8. The AREOT is an underground tunnel of around 500 metre long to be built beneath Lung Wo Road at the East of Hong Kong Station, which will enable trains running on the TCL and AEL to turn around at the back of the Hong Kong Station (instead of at the front) enhancing the train operation efficiency. It will enable the trains to change swiftly from Hong Kong bound to Tung Chung bound and Airport bound respectively to attain the maximum design carrying capacities of the two lines⁴. The AREOT is included in the project scope of the Airport Railway as phase 2 works to

³ The estimated population intake of TCE has taken into account the possible increase in development intensity of Area 99 and 100 public housing sites in TCE, which is still subject to Town Planning Board's approval.

⁴ Before the AREOT is constructed and commissioned, TCL can only operate at a maximum frequency of 18 trains per hour per direction (tphpd) in an 8-car train configuration, and AEL can only operate at a maximum frequency of 8 tphpd in an 8-car train configuration. Upon completion of the respective extended overrun tunnels, TCL and AEL would be able to attain the maximum capacities of 24 tphpd in an 8-car train configuration and 8 tphpd in a 10-car train configuration respectively.

be carried out by Mass Transit Railway Corporation (MTRC). However, according to the assessment during the construction of the Airport Railway in the 1990s, there was no imminent need for the AREOT. It was therefore decided that the timetable for construction of AREOT would be reviewed upon the future patronage of TCL and AEL. MTRC has then made an interim provision of crossovers at the West of Hong Kong Station for the reversal of the railway direction for TCL and AEL. In 2011, a short section of the AREOT was built under the Central Reclamation Phase III project as buffer zone to meet the operational need. According to MTRCL's estimate, without the AREOT, passengers at the critical section from Tsing Yi Station to Lai King Station of TCL would experience a standee density exceeding 4 persons per square metre⁵ (ppsm) during morning peak hours starting from 2032. Therefore, it is needed to construct the remaining section of about 460 metre of the AREOT for commissioning by 2032.

9. The alignment of AREOT will fall under the footprint of the overrun tunnel for the North Island Line (NIL), which is also one of the railways proposed under the RDS-2014. As it is technically impracticable to build separate underground structures for the two overrun tunnels at the same site, MTRCL has proposed an integrated structure to accommodate both and to include relevant protection works under the TCL Extension project including the structures of the overrun tunnel for NIL which overlaps with the AREOT, and the associated NIL portion in the combined ventilation building. A layout plan of AREOT (Remaining Section) is at **Annex B**.

Works Programme

10. Taken into account that about three years would be required for the detailed planning and design of the project, construction is expected to commence in 2023. Construction of the two stations and associated railways under the TCL Extension project is expected to complete by 2029. For the AREOT (Remaining Section), it is targeted to be in place by 2032.

⁵ As pointed out in paragraph 4.18 of RDS-2014, "In the planning for the new railway lines, a service benchmark of four ppsm in train compartments will be adopted. As for the extension of existing railway lines, the service level will be subject to the infrastructural constraints of the existing lines to which they are added, such as the signaling system and shortest platform of a line."

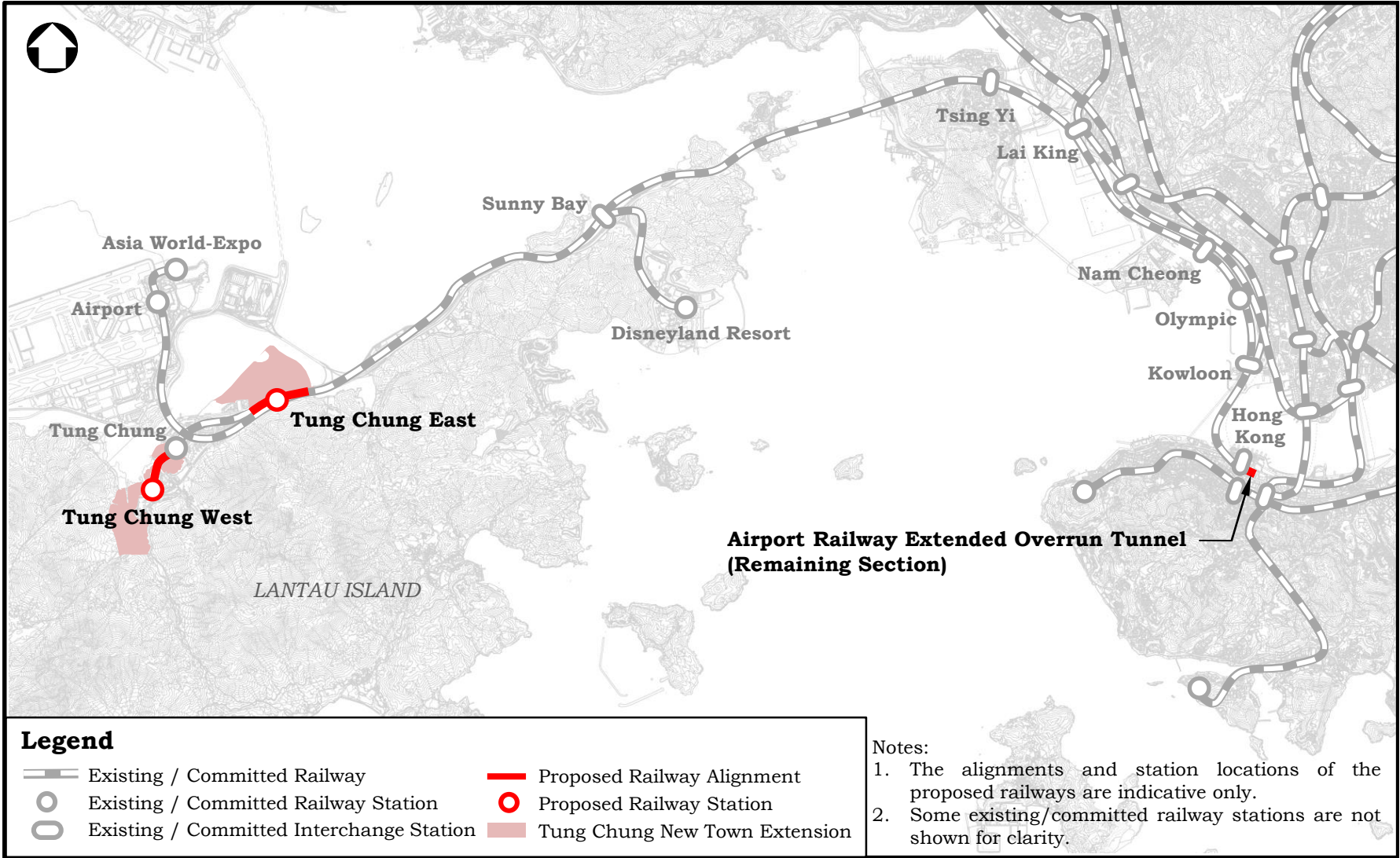
Financial Arrangement

11. According to MTRCL's Project Proposal, the estimated capital cost of the TCL Extension is about \$18.7 billion (in December 2016 prices). We will further ascertain the cost estimate along with the development of the detailed design as well as any key change in development parameters.

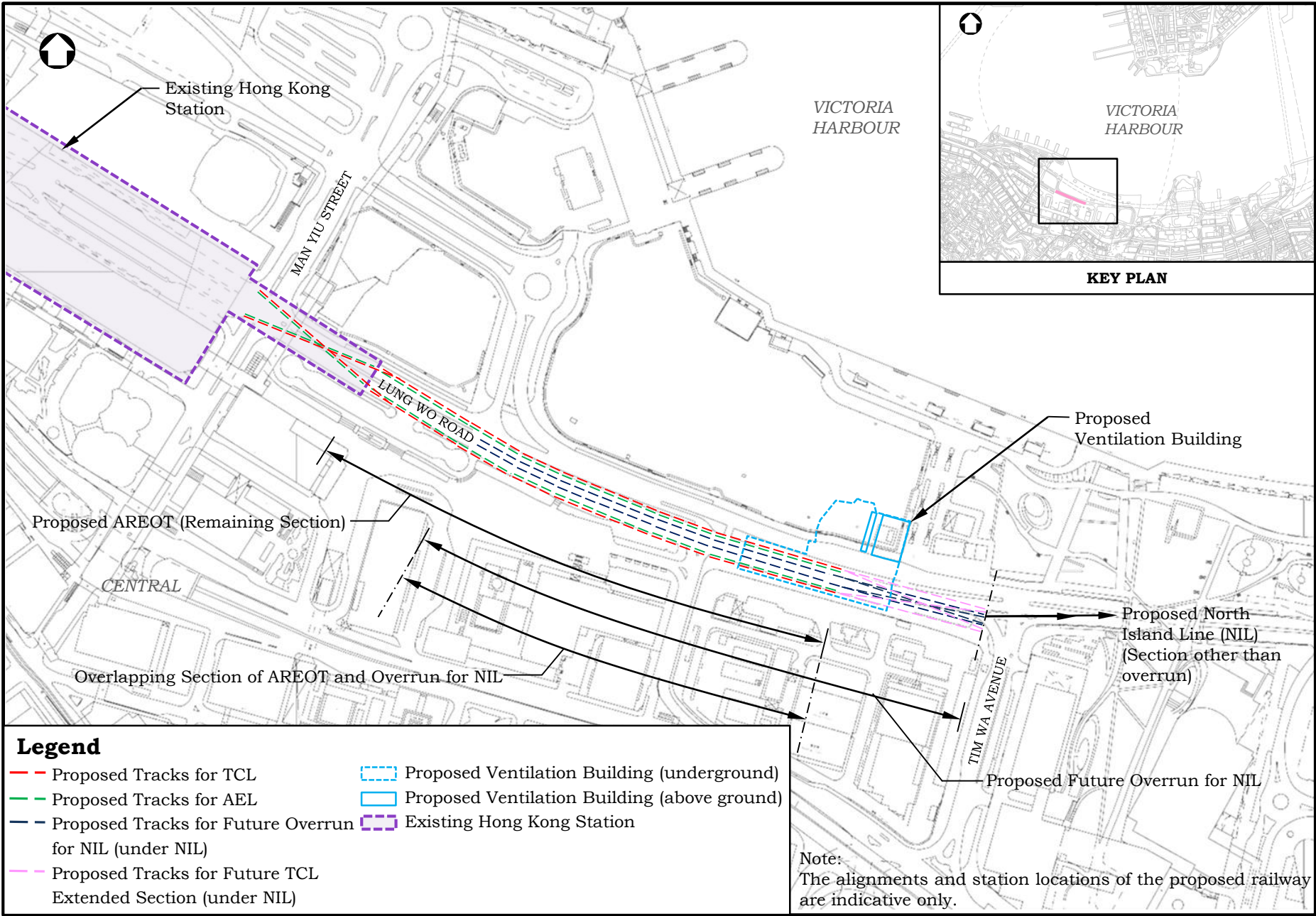
Way Forward

12. The Government has invited MTRCL to proceed with the detailed planning and design of the TCL Extension project, and would negotiate with MTRCL on the funding arrangement of the TCL Extension project on the basis of the ownership approach. The negotiation will be conducted in parallel with the detailed planning and design process of the project, during which the construction and operating costs of the project will be carefully examined.

**Transport and Housing Bureau
Highways Department
April 2020**



Annex A – Railway Scheme of TCL Extension



Legend

- Proposed Tracks for TCL
- Proposed Tracks for AEL
- Proposed Tracks for Future Overrun for NIL (under NIL)
- Proposed Tracks for Future TCL Extended Section (under NIL)
- Proposed Ventilation Building (underground)
- Proposed Ventilation Building (above ground)
- Existing Hong Kong Station

Note:
The alignments and station locations of the proposed railway are indicative only.

Annex B – Layout Plan of Airport Railway Extended Overrun Tunnel (AREOT) (Remaining Section)