

**For Information
5 January 2007**

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

**Northern Link and Hong Kong Section of
Guangzhou – Shenzhen – Hong Kong
Express Rail Link**

INTRODUCTION

This paper presents the supplementary information requested by the Subcommittee at its last discussion in April 2006 on the proposed Northern Link (NOL) and the Hong Kong section of the Guangzhou – Shenzhen – Hong Kong Express Rail Link (ERL) and provides Members with an update on the latest progress of these projects.

BACKGROUND

2. At the meeting of the Subcommittee held on 21 April 2006, Members requested the Administration to provide the following supplementary information –

- (a) a detailed comparison of the Shared Corridor Option and Dedicated Corridor Option;
- (b) a cost-benefit analysis of locating the ERL terminal at Chau Tau and West Kowloon;
- (c) the alignment options considered under the Dedicated Corridor Option; and
- (d) miscellaneous information.

RESPONSE OF THE GOVERNMENT

Comparison of Corridor Options

3. As we last briefed the Subcommittee, there are two options for the Hong Kong section of the ERL: the Dedicated Corridor Option by building a dedicated rail track running from the proposed West Kowloon Terminus to the boundary, or the Shared Corridor Option by using the existing West Rail (WR) rail track from the proposed West Kowloon Terminus up to the existing WR Kam Sheung Road (KSR) Station, the rail track of the NOL and a new rail track to make connection with the Mainland section of the ERL. The proposed

A alignments of these two options are shown at **Annex A**. A detailed
B comparison of the two options is set out in **Annex B**.

Cost-Benefit Analysis for Different Terminal Locations

C 4. A cost-benefit analysis of provision of the terminal at Chau Tau and West Kowloon (WKN) is given in **Annex C**. As shown, the proposal with the terminal at West Kowloon performs better than that at Chau Tau in terms of the transport benefits.

Alignment Options considered under the Dedicated Corridor Option

D 5. For the Dedicated Corridor Option, apart from the more direct route involving a continuous tunnel as shown in **Annex A**, the Kowloon-Canton Railway Corporation (KCRC) have also considered in their previous studies the possible envelope of the dedicated corridor alignments including an alignment option at the east of the direct route so that a 2km section near Tai Po would be running at ground level. The possible envelope of the dedicated corridor alignments is shown in **Annex D** and a comparison of the Continuous Tunnel Option and the Break-up Tunnel Option is as follows:

	Continuous Tunnel Option	Break-up Tunnel Option
Capital Cost	About 10% lower	Higher
Construction Risk	Higher	Lower
Ventilation System	More substantial	Less substantial
Journey Time	Shorter	Longer
Provision of emergency evacuation	Special provision for evacuation is needed	Each tunnel is over 10km long; special provision for evacuation is still required
Alignment Length	Shorter	Longer
Environmental Implications	Less environmental impacts	Environmental implication at open section requires attention

Miscellaneous information requested by the Subcommittee

6. In our briefing to the Subcommittee in April 2006, we also agreed to provide information regarding the projected patronage of WR and jobs created by the NOL/ERL project.

7. As for the projected patronage of WR, it is projected that the average weekday patronage of WR will be some 600 000 in 2016 following the completion of the Kowloon Southern Link (currently targeted in 2009) and the proposed NOL.

8. Regarding the job opportunities created by the NOL/ERL project, the KCRC has estimated that the implementation of the project would create

about 7 000 employment opportunities.

UPDATES ON THE LATEST PROGRESS

9. Following the decision of the Executive Council in January 2006, we have asked the KCRC to proceed with further planning of the proposed Hong Kong section of the ERL and the NOL. Meanwhile, protection works are being carried out at the Kowloon Southern Link so that the construction for the ERL (for both Dedicated and Shared Corridor Options) in future will not be affected. Moreover, we have been liaising with the Mainland side including the Ministry of Railways (MoR) of the State Council to take forward the further planning of the project. During this period, there are some crucial changes in the Mainland's planning parameters which may have significant impact on the planning of the Hong Kong section of the ERL, in particular on the choice of corridor options. These changes are set out below.

Substantial increase in long-haul train services contemplated

10. According to the MoR, following the development of the national high-speed rail network in 2010s, many Mainland cities would likely wish to operate long-haul through trains to Hong Kong. They adopted the planning assumptions that 10 Mainland cities will operate long-haul through trains to Hong Kong in 2020, and that the number of such cities will increase to 15 in 2030. This will generate 15 long-haul train pairs per day in 2020 and increase to 23 pairs daily in 2030. This new forecast is higher than that in our last briefing to the Subcommittee.

11. We certainly welcome more cities to operate through trains to Hong Kong as this would strengthen our position as a regional transportation hub. But at the same time we have to check how the increased demand of the long-haul trains should best be met by the ERL.

Addition of a station in Shenzhen city centre

12. As we last briefed the Subcommittee, the ERL will link Hong Kong to Shibi at Guangzhou through Longhua at Shenzhen. Recently, the Mainland side has confirmed their decision to add a station at Futian of Shenzhen (location shown at **Annex E**) to serve ERL passengers travelling to and from the city area of Shenzhen. This will also be the terminus of the Mainland domestic section of the ERL. We are now assessing how the additional station in Futian would affect the performance of the ERL.

Addition of a new rail line to RTS

13. As part of the planned Rapid Transit System (RTS) network in the Pearl River Delta, with a branch running from Longhua, through Gongming, Humen, Dongchong to Shibi, an additional rail line running along the coastal area, connecting Shenzhen city centre, Humen, Dongguan and Guangzhou East, will be added. The alignment of the additional rail line is shown at **Annex F**. The new RTS line, from Shenzhen city centre to Guangzhou East, would expand the rail catchments of the ERL in Shenzhen, Dongguan and

Guangzhou, which are the three most popular destinations of the cross boundary passengers from Hong Kong.

MoR's requirement to deploy wider train cars

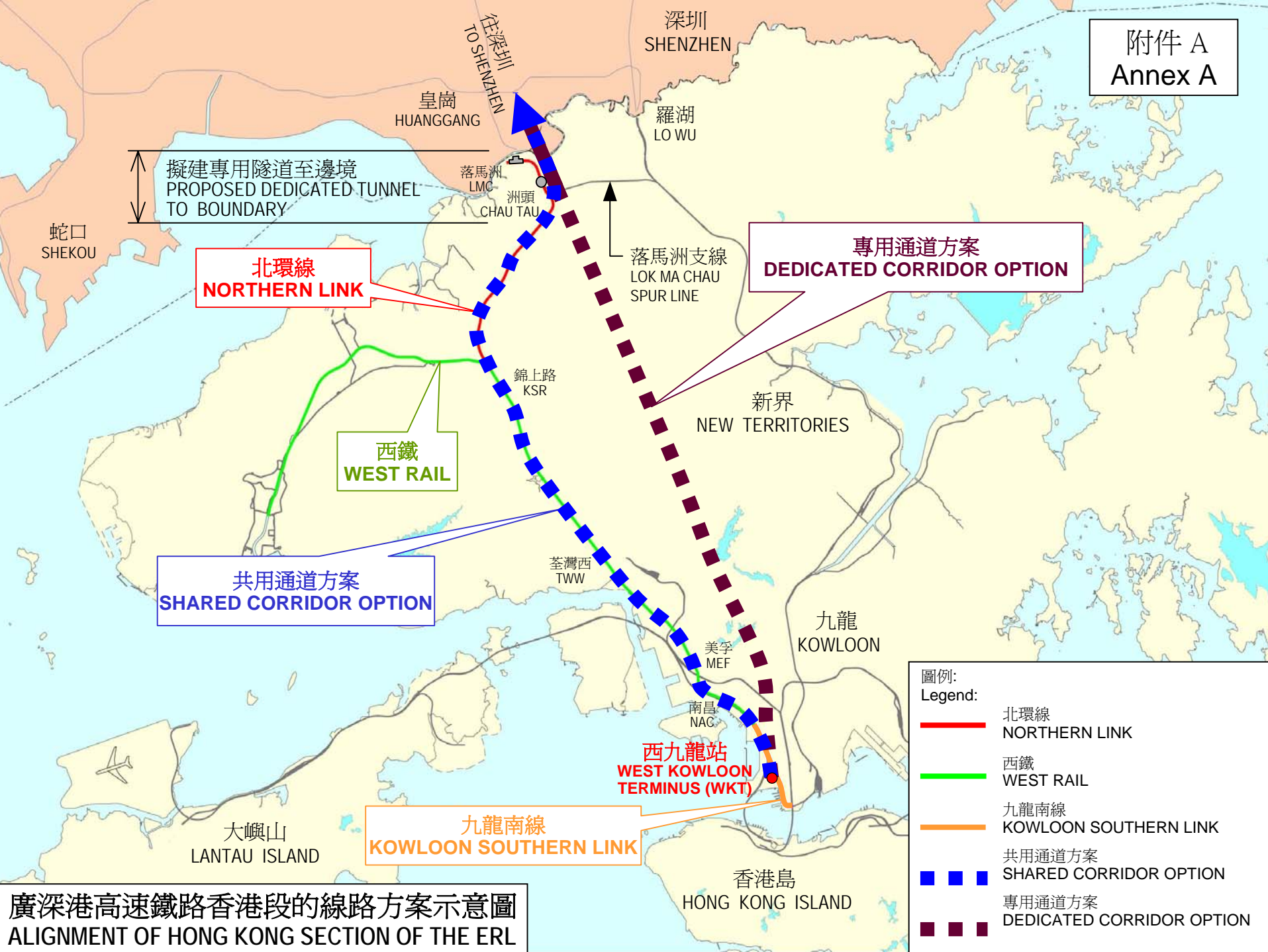
14. The MoR advised that the new national standard width of high-speed trains is 3.4m and the ERL corridor should be able to accommodate these wider trains. This would have implications to the WR corridor as the platform configuration of the WR is designed for train cars no wider than 3.1m. Our preliminary assessment is that it would be technically possible to modify the platforms of three WR stations (Nam Cheong, Mei Foo and Tsuen Wan West) to accommodate the safe passage of the wider ERL trains under the Shared Corridor Option. The modification works for each platform would take about 6 months.

WAY FORWARD

15. Based on the recent changes in project assumptions and planning parameters, as described above, we would need to re-assess the patronage forecast for the ERL. This updated forecast on patronage is likely to be higher than the proposal reported to the Subcommittee in April 2006 and may have implications on the choice of the option for the Hong Kong section of the ERL. Currently we are reviewing the planning parameters including patronage forecasts and train frequency, etc., with the Mainland side.

16. We will continue to keep close contact with the Mainland side for the further planning of NOL/ERL. In the meantime, the KCRC is embarking on a consultancy study of the ERL, including the examination of the patronage forecast, financial viability and economic implications, and preliminary site investigation. The KCRC intends to submit the study report on NOL/ERL to the Government in mid 2007.

**Environment, Transport and Works Bureau
January 2007**



北環線
NORTHERN LINK

專用通道方案
DEDICATED CORRIDOR OPTION

西鐵
WEST RAIL

共用通道方案
SHARED CORRIDOR OPTION

九龍南線
KOWLOON SOUTHERN LINK

- 圖例:
Legend:
- 北環線
NORTHERN LINK
 - 西鐵
WEST RAIL
 - 九龍南線
KOWLOON SOUTHERN LINK
 - 共用通道方案
SHARED CORRIDOR OPTION
 - 專用通道方案
DEDICATED CORRIDOR OPTION

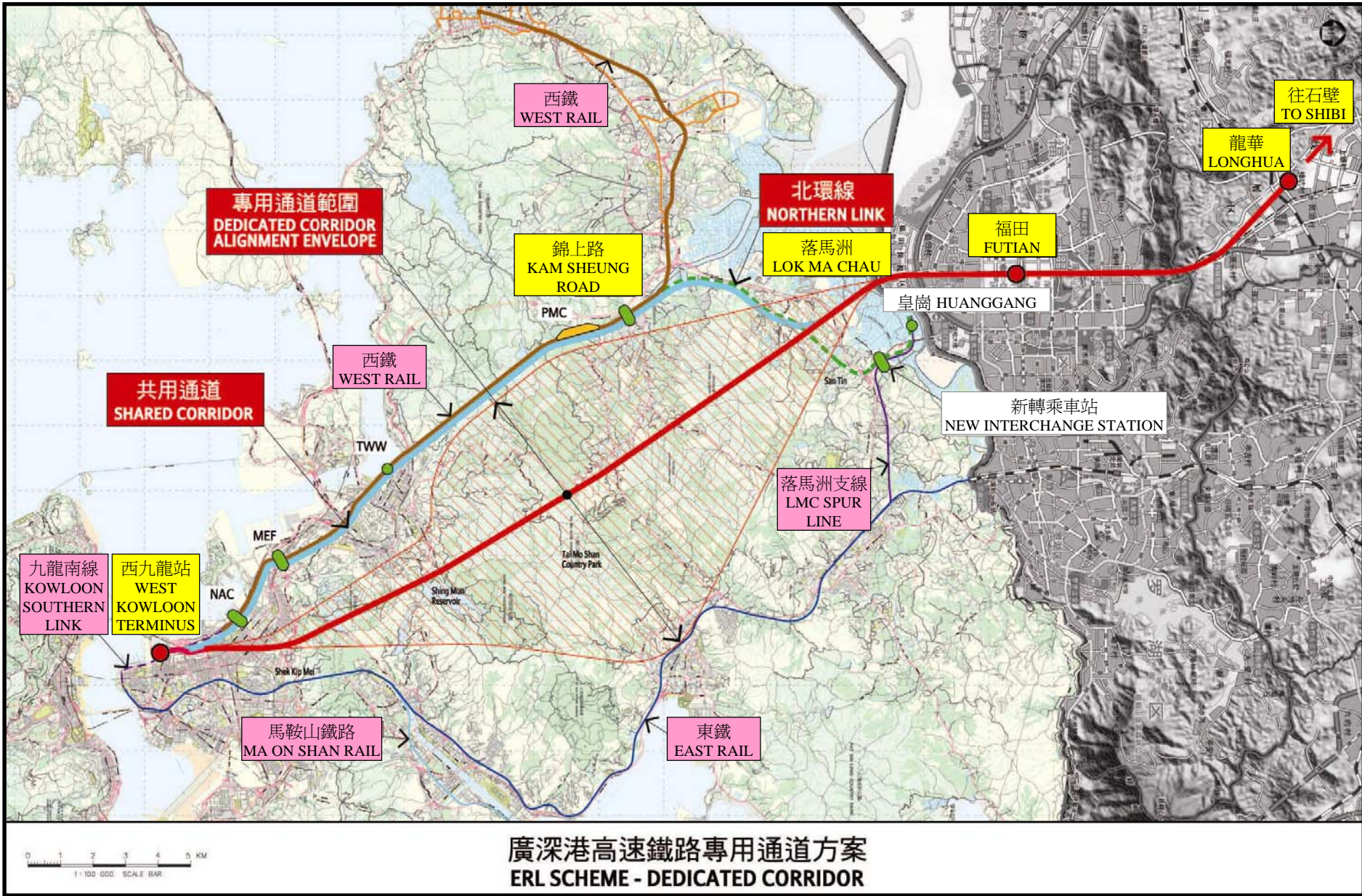
廣深港高速鐵路香港段的線路方案示意圖
ALIGNMENT OF HONG KONG SECTION OF THE ERL

**Comparison between Shared Corridor Option and
Dedicated Corridor Option**

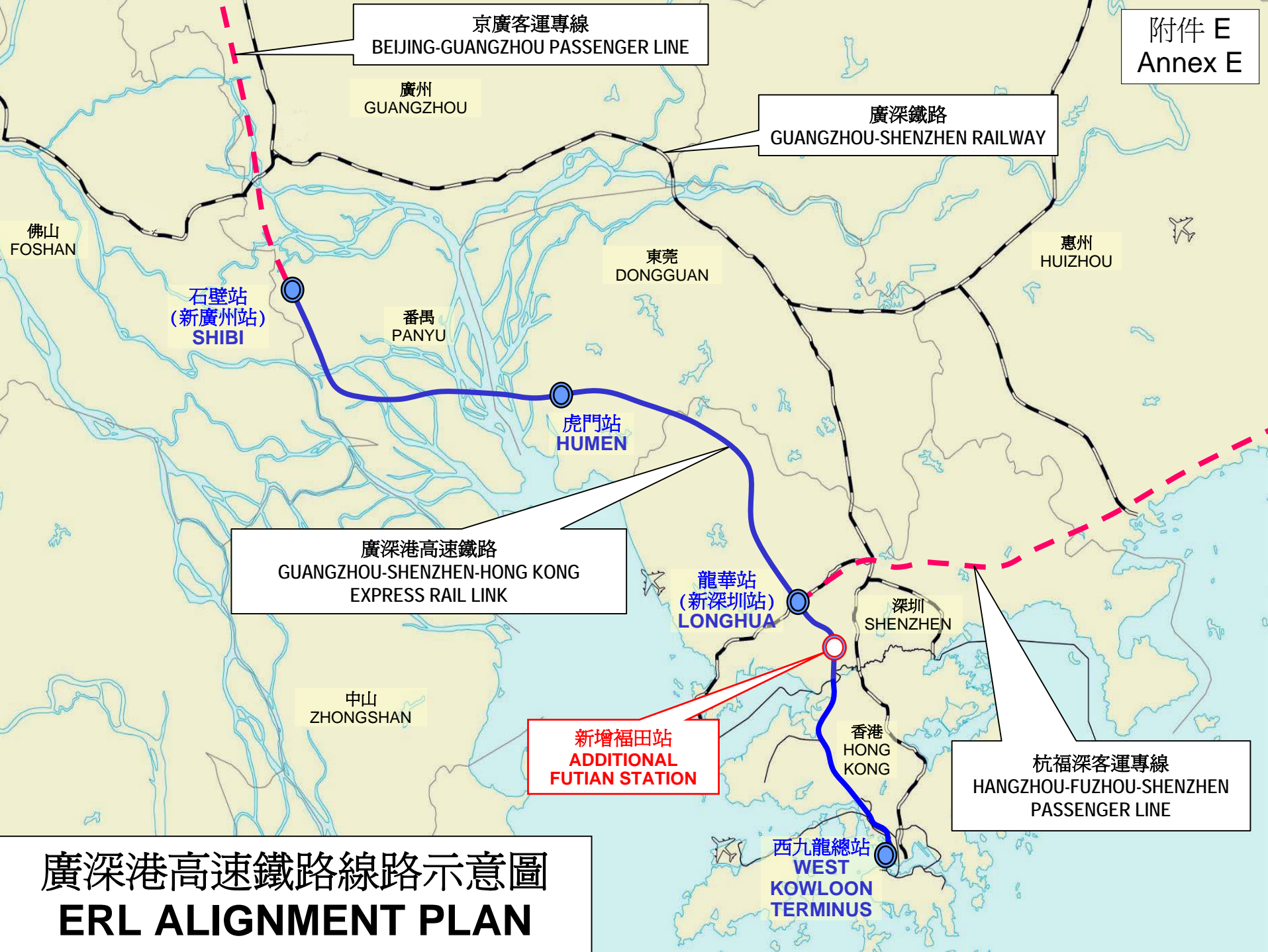
	Shared Corridor Option (SCO) (NOL + ERL on shared tracks)	Dedicated Corridor Option (DCO) (NOL + ERL on separate tracks)
Capital Cost	<ul style="list-style-type: none"> • DCO costs about 50% more 	
Financial Performance	<ul style="list-style-type: none"> • Both options are not financially viable • SCO will require a lower funding support from Government 	
Economic Internal Rate of Return (EIRR) in real terms	17%	15%
Form of Construction	<ul style="list-style-type: none"> • Involves viaducts and shorter tunnels 	<ul style="list-style-type: none"> • Involves about 30km long tunnel
Land	<ul style="list-style-type: none"> • DCO involves mostly stratum resumption and less land resumption 	
Environmental Implications	<ul style="list-style-type: none"> • Manageable 	<ul style="list-style-type: none"> • Manageable
Earliest Completion Date	2013	2014/2015
Impact on WR Service	<ul style="list-style-type: none"> • Manageable for 6 ERL train pairs/hour during peak hours 	<ul style="list-style-type: none"> • Nil
Maximum Train Speed within Hong Kong (km/h)	130	160
Passenger Profile	<ul style="list-style-type: none"> • No major difference 	
Journey Time (minutes)		
(a) between West Kowloon and the boundary	25	13
(b) between West Kowloon and Guangzhou	60	48

**ERL - Comparison between Terminal Locations
at Chau Tau and West Kowloon**

	Chau Tau	West Kowloon
Alignment	<ul style="list-style-type: none"> • Chau Tau to boundary 	<ul style="list-style-type: none"> • West Kowloon to boundary
Total Project Cost	<ul style="list-style-type: none"> • About 30% lower 	<ul style="list-style-type: none"> • Higher
Financial Performance	<ul style="list-style-type: none"> • No significant difference • Not financially viable and funding support from Government is needed 	
Patronage	<ul style="list-style-type: none"> • About 30% lower ERL patronage • More attractive to passengers from Tsuen Wan and the New Territories • Less attractive to passengers from Hong Kong Island and urban Kowloon 	<ul style="list-style-type: none"> • Higher ERL patronage in 2016 • Less attractive to passengers from Tsuen Wan and the New Territories • More attractive to passengers from Hong Kong Island and urban Kowloon
Journey Time from Kowloon (West Kowloon) to Guangzhou	<ul style="list-style-type: none"> • About 5-10 minutes longer than the West Kowloon terminus option 	<ul style="list-style-type: none"> • Within 60 minutes
No. of interchanges to West Kowloon	<ul style="list-style-type: none"> • Two: one at Chau Tau station to NOL and then at Kam Sheung Road station to WR 	<ul style="list-style-type: none"> • Nil
Compatibility with the surroundings	<ul style="list-style-type: none"> • Incompatible with the rural characteristic 	<ul style="list-style-type: none"> • Well integrated with the existing and planned developments in the district
Environmental Implications	<ul style="list-style-type: none"> • Severe as it falls within conservation area/green belt 	<ul style="list-style-type: none"> • Manageable
Connectivity	<ul style="list-style-type: none"> • Requires more interchanges in local rail network to access Central Business District (CBD) in Hong Kong Island • Has limited road access 	<ul style="list-style-type: none"> • Requires less interchanges to access CBD, therefore favourable to business travellers • Has good rail connections to West Rail, Tung Chung Line and Airport Express Line • Has good connections to Western Harbour Crossing and West Kowloon Expressway



廣深港高速鐵路專用通道方案
ERL SCHEME - DEDICATED CORRIDOR



廣深港高速鐵路線路示意圖
ERL ALIGNMENT PLAN

京廣客運專線
BEIJING-GUANGZHOU PASSENGER LINE

廣深鐵路
GUANGZHOU-SHENZHEN RAILWAY

廣深港高速鐵路
GUANGZHOU-SHENZHEN-HONG KONG EXPRESS RAIL LINK

新增福田站
ADDITIONAL FUTIAN STATION

杭福深客運專線
HANGZHOU-FUZHOUSHENZHEN PASSENGER LINE

服務深圳地區優化的城際快速軌道網

Enhanced RTS Network Serving Shenzhen areas

