Government of the Hong Kong Special Administrative Region Transport Bureau

Railway Development Strategy 2000

May 2000

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1 INTRODUCTION

1.1 This is the second Railway Development Strategy to be prepared for Hong Kong. The Strategy provides the planning framework for further expansion of Hong Kong's railway network up to 2016.

1.2 The Strategy is based on the findings of the Second Railway Development Study which was completed in early 2000. The further decision to build individual railway projects will follow on detailed engineering, environmental and financial studies relating to these projects. Public consultation will be undertaken prior to the implementation of any railway projects.

Policy on railway development

1.3 Railways are environmentally friendly and efficient mass carriers. Hong Kong's railways now account for more than 30% of daily domestic passenger travel, over 80% of cross-boundary passenger trips and a limited amount of freight movement between Hong Kong and the Mainland. The new transport strategy entitled "Hong Kong Moving Ahead" promulgated in October 1999 has reaffirmed the need to rely on railways as the backbone of Hong Kong's transport system. Railways are essential to Hong Kong's continued economic, social and land development, and will be given priority in Government's plans for infrastructure development.

1.4 The two Railway Corporations have to operate on a prudent commercial basis. Government acknowledges that any new railway project will have to provide a commercial return to the Corporation, or any other operator, chosen to implement the project. The present practice to allow, where appropriate, the Railway Corporations to develop property on the stations and depots has worked well and should be retained. Government will also continue to pay for ancillary public works item required to support railway development. Other support for marginally viable projects will be considered on the basis of the need for the individual projects.

The 1994 Railway Development Strategy

1.5 The Government formulated the first Railway Development Strategy for Hong Kong in 1994. It set out a railway development programme, according priority to the implementation of three new railway projects, namely, the KCR West Rail, the MTR Tseung Kwan O Extension, and the Ma On Shan to Tai Wai Rail Link which is to couple with an extension of the KCR East Rail from Hung Hom to Tsim Sha Tsui.

1.6 The three rail projects are now at different stages of implementation. In addition, the decision was taken in 1999 for the implementation of the Sheung Shui to Lok Ma Chau Spur Line to provide additional rail passenger crossing facilities between Hong Kong and Shenzhen to relieve the congestion at Lo Wu. In late 1999, we decided to build the Penny's Bay Rail Link to open in time for the Disney Theme Park. Thus a total of six new railway lines are scheduled for completion between 2002 and 2005. These six railway lines cost over HK$100 billion. Their completion signifies the expansion of the existing railway network by about 40% to more than 200 kilometres. The completed railway network by the year 2006 is shown in **Figure 1**.

FIGURE 1: 2006 RAILWAY NETWORK

2. THE SECOND RAILWAY DEVELOPMENT STUDY

2.1 In order to cater for Hong Kong's continued population growth (which is projected to reach 8.9 million by 2016) and the increasing cross-boundary social and economic activities, Government commissioned the Second Railway Development Study (RDS-2) in March 1998 to examine how best to further expand the rail network to the year 2016.

The study objectives

2.2 The RDS-2 examined the needs of the future railway network to fulfill the following objectives:

(a) to relieve bottlenecks in the existing railway systems;

(b) to provide rail service to strategic growth areas for housing and economic development;

(c) to meet cross-boundary passenger and freight demands; and

(d) to increase the share of rail in the overall transport system to reduce reliance on road-based transport.

New railway schemes

2.3 In order to achieve the intended objectives, RDS-2 has studied a number of new railway schemes which can be combined in different ways with the existing railway lines to form expanded railway networks. Six component railway schemes have been shortlisted for the formation of the basic network options. They are:-

(a) North Hong Kong Island Line;

(b) East Kowloon Line;

(c) Fourth Rail Harbour Crossing;

(d) Tai Wai to Diamond Hill Link;

(e) Kowloon Southern Link; and

(f) Northern Link

2.4 In addition, three stand-alone schemes, which would not affect the formation of the basic network options, have also been identified to serve transport needs in particular corridors. They are the West Hong Kong Island Line, the Regional Express Line and the Port Rail Line.

2.5 RDS-2 recommends that network expansion should be based on the East Kowloon Line connecting with the Fourth Rail Harbour Crossing.

3. RAILWAY DEVELOPMENT STRATEGY 2000

3.1 Based on the key findings of RDS-2, Government has formulated Railway Development Strategy 2000. The Strategy maps out the preferred railway network expansion plan for the HKSAR up to the year 2016.

Key features of the preferred network

3.2 On completion, the Network will feature six new rail corridors and a potential Port Rail Line (PRL). The six new rail corridors are shown in **Figure 2**. They are:-

(a) an east-west corridor from Chai Wan to Tung Chung formed by the MTR Island Line (ISL), the North Hong Kong Island Line (NIL) and the Tung Chung Line (TCL);

(b) a second east-west corridor from Tseung Kwan O to Kennedy Town formed by the MTR Tseung Kwan O Extension, ISL and the West Hong Kong Island Line (WIL);

(c) a north-south corridor which, depending on the operator, could either run direct from Tai Wai or Ma On Shan to Hong Kong Island via South East Kowloon;

(d) a Kowloon Southern Link (KSL) that will provide convenient connection between the KCR East Rail and West Rail via the Kowloon peninsula;

(e) a Northern Link (NOL) that will connect the KCR East Rail and West Rail at the northern part of the New Territories; and

(f) a Regional Express Line (REL) that will provide rapid rail transport between the Boundary and the Metro areas.

The potential PRL will be from Lo Wu to the Kwai Chung terminals, via either East Rail or West Rail.

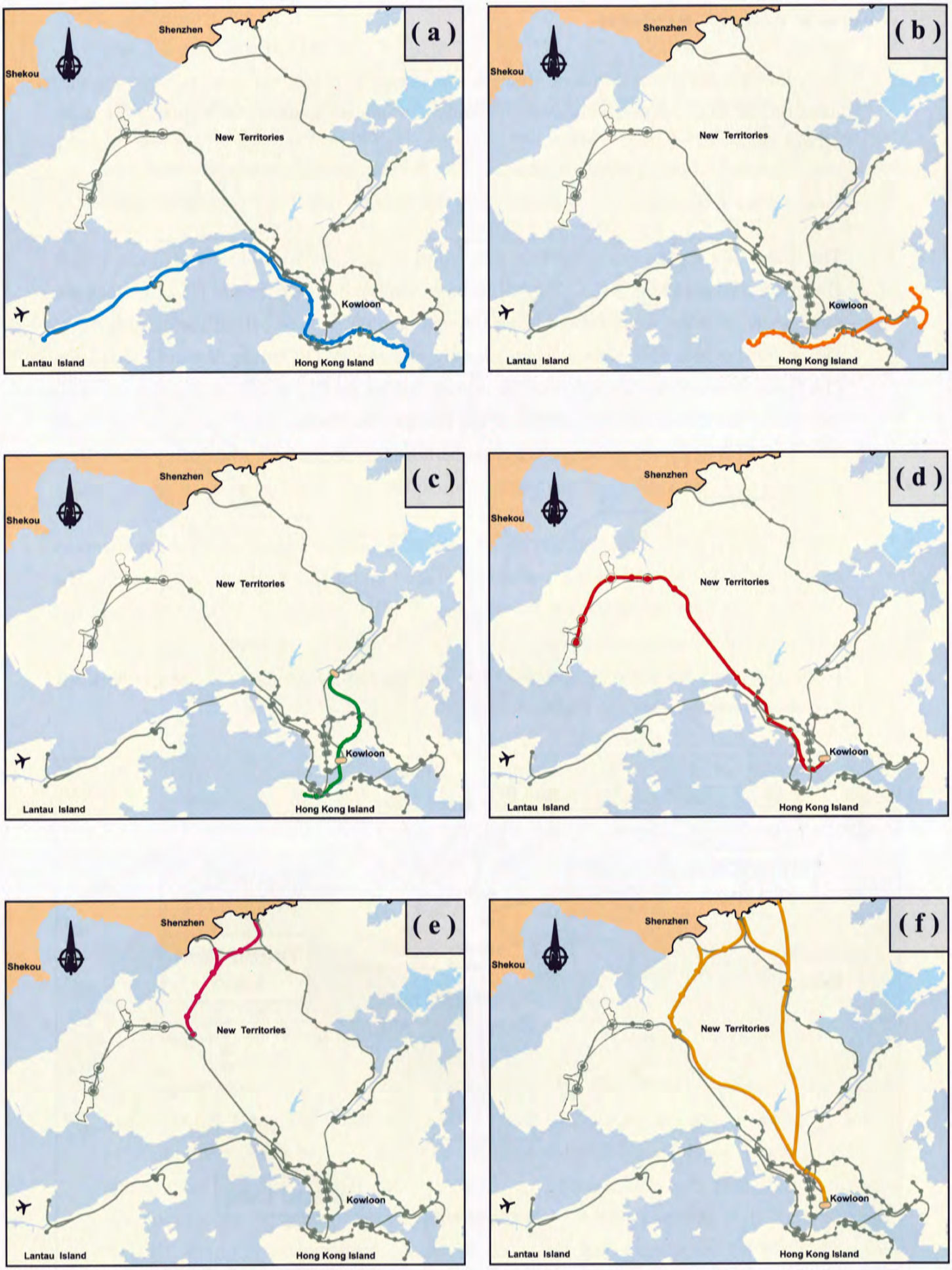


FIGURE 2: NEW RAIL CORRIDORS

The new railway projects

3.3 In order to achieve the Network desired, we intend to group the new railway schemes identified in RDS-2 into the following projects for implementation (see **Figure 7** on pages 10 and 11):-

Island Line Extensions

3.4 The Island Line Extensions comprise a new North Hong Kong Island Line (NIL) and a West Hong Kong Island Line (WIL). The NIL is an extension of the existing MTR TCL along the north shore of Hong Kong Island to run through onto the eastern half of the existing MTR ISL at the Fortress Hill Station. Concurrently, the new MTR Tseung Kwan O Extension (TKE) will join and run through onto the western half of the ISL at the Tin Hau Station. NIL can relieve the Causeway Bay section of the ISL and the Nathan Road section of the Tsuen Wan Line (TWL) by redistributing the cross-harbour trips to the TCL and TKE. The WIL is an extension of the MTR ISL from Sheung Wan to Kennedy Town.

3.5 Implementation of the NIL depends on the forecast timing of occurrence of the bottlenecks on the ISL and TWL and on the availability of the Central and Wanchai Reclamation. The viability of WIL would be affected by the progress of the Western District Development and success of the urban renewal process. As both NIL and WIL are natural extensions of the Island Line, they should be considered to be implemented as a package. The layout of the two railway lines is shown in **Figure 3**.

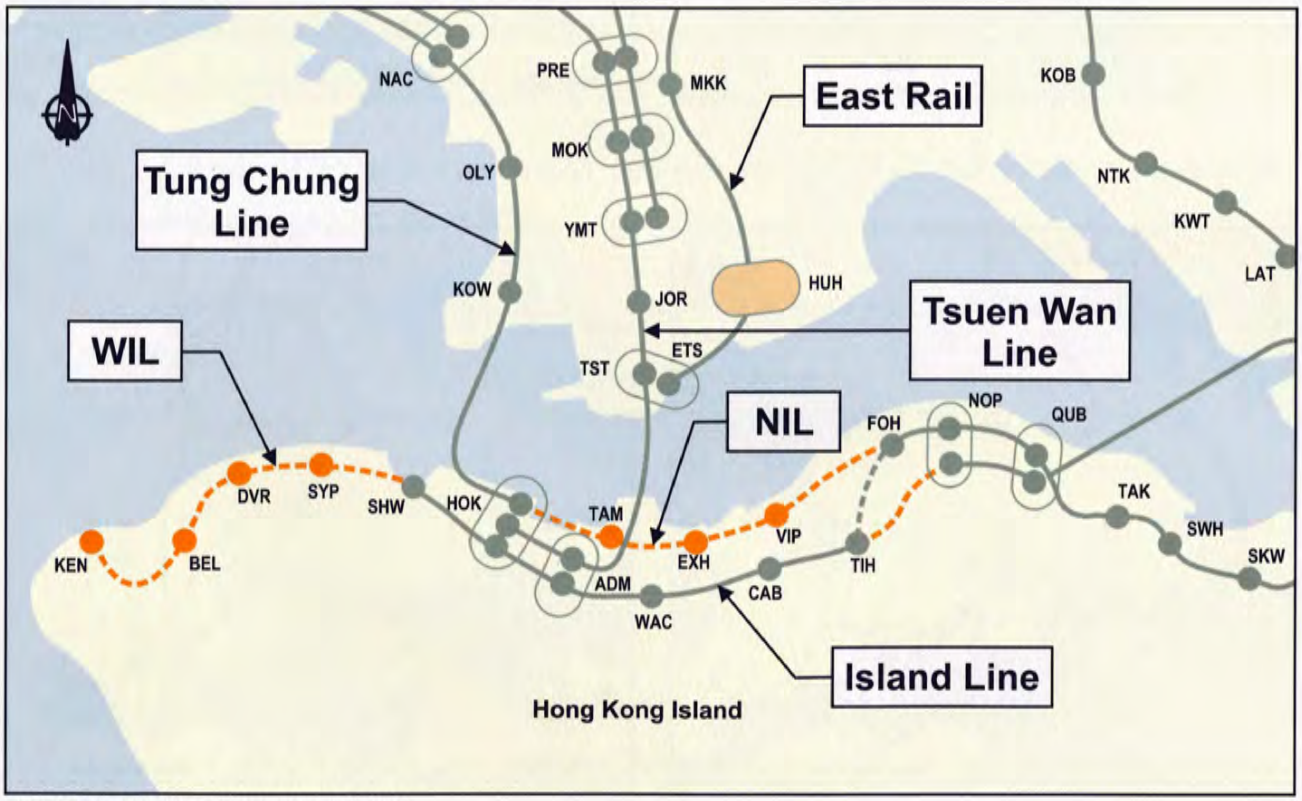


FIGURE 3: ISLAND LINE EXTENSIONS

Sha Tin to Central Link

3.6 The Sha Tin to Central Link will be a new strategic rail corridor in the rail network formed by EKL, FHC and TDL (see **Figure 4**). Not only will it increase significantly the cross-harbour and Shatin-Kowloon rail capacities, it will also help to redistribute the flows and relieve the other railway lines in Hong Kong and Metro Kowloon.

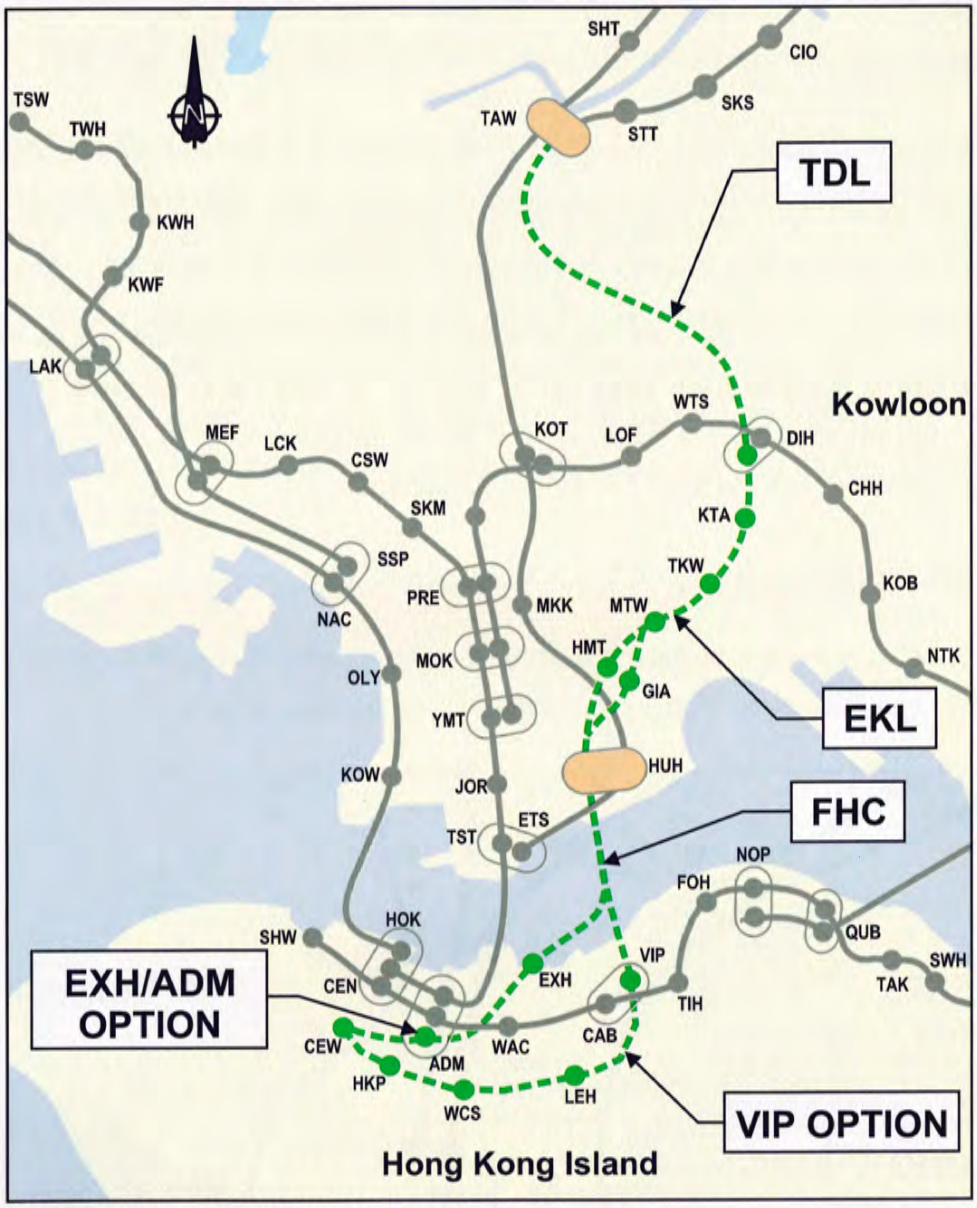


FIGURE 4: SHA TIN TO CENTRAL LINK

3.7 The East Kowloon Line (EKL) section of the Link connects the MTR Diamond Hill Station and the KCR Hung Hom Station. RDS-2 has found that on its own, the EKL is not an efficient, nor a viable project. It should be connected with other railway schemes to form a strategic rail corridor. To the south, the EKL would be extended from Hung Hom across the harbour to Hong Kong Island, forming the Fourth Rail Harbour Crossing (FHC). To the north, the EKL would be extended from Diamond Hill to Tai Wai, forming the Tai Wai to Diamond Hill Link (TDL).

3.8 The Fourth Rail Harbour Crossing (FHC) starts from Hung Hom on Kowloon side. On Hong Kong Island, the FHC could route directly to Central via Exhibition/Admiralty (the EXH/ADM Option) or via Victoria Park, Leighton Hill and Wanchai South (the VIP Option). The EXH/ADM Option is cheaper to build and provides a direct route from Hung Hom to Central. It caters well for the daily commuter traffic. On the other hand, the VIP Option would be able to accommodate a more diversified nature of trips as it connects to the busy commercial and retail Causeway Bay district. In longer term, the VIP Option may help facilitate a shift of the development focus from Central towards Causeway Bay.

3.9 The Tai Wai to Diamond Hill Link (TDL) will provide an additional rail corridor from North East New Territories to Kowloon so as to relieve the East Rail bottleneck at Beacon Hill Tunnel.

3.10 The implementation of the Sha Tin to Central Link will depend on the overall transport requirement of the network expansion, the pace of the planned developments in North East New Territories and Ma On Shan as well as the programme of the South East Kowloon Development and the Central and Wanchai Reclamation.

Kowloon Southern Link

3.11 The KSL is an extension of West Rail from its Nam Cheong Station to connect with the KCR Tsim Sha Tsui Extension. The layout of the KSL is shown in **Figure 5**.

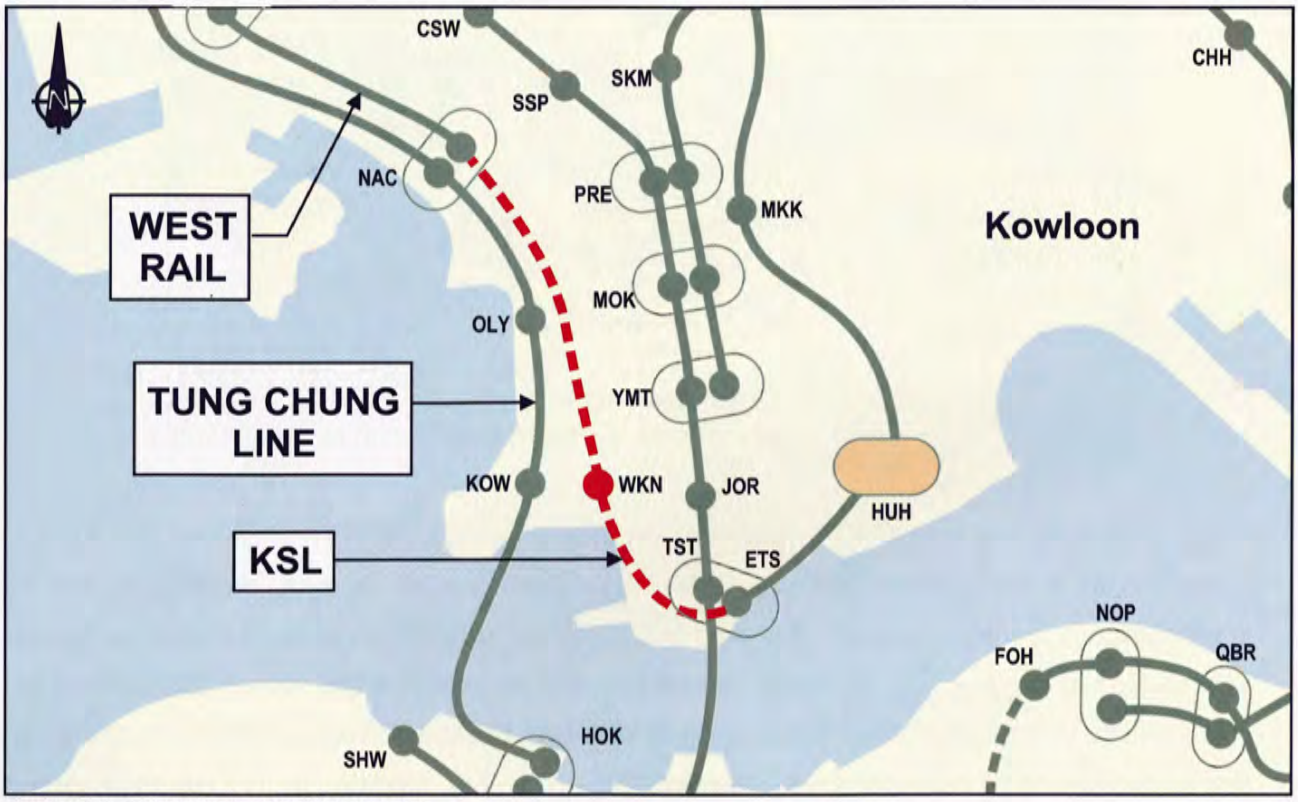


FIGURE 5: KOWLOON SOUTHERN LINK

3.12 The KSL will provide an efficient east-west link round the southern part of the Kowloon peninsula and will help support development in Lantau Island, North West New Territories, West and East Kowloon. In addition, it can help relieve the cross harbour section of the TCL by attracting some of the cross-harbour trips originated from North West New Territories to the FHC. Implementation of the KSL is dependent on the growth in travel demands, in particular that on the TCL arising from further development of Lantau Island and the strategic growth areas in North West New Territories.

Northern Link

3.13 The Northern Link (NOL) would connect West Rail at Kam Sheung Road to East Rail at Kwu Tung and to the boundary crossing point at Lok Ma Chau. It will provide domestic passenger service for the strategic growth areas in North New Territories and cross-boundary passenger service for the western part of the HKSAR. Implementation timing of the line will depend on the development programme of the strategic growth areas in North East New Territories and North West New Territories and the growth of the cross-boundary traffic. The layout of NOL is shown in **Figure 6**.

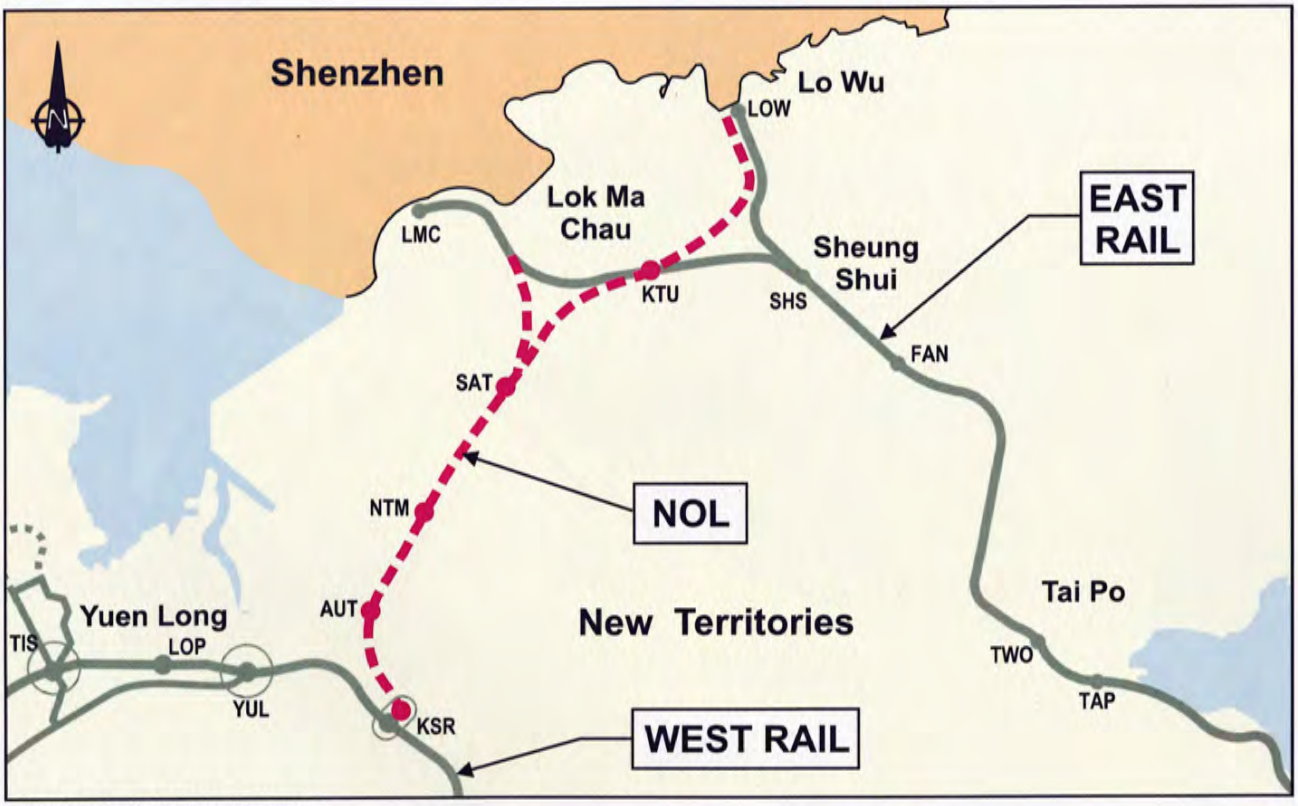


FIGURE 6: NORTHERN LINK

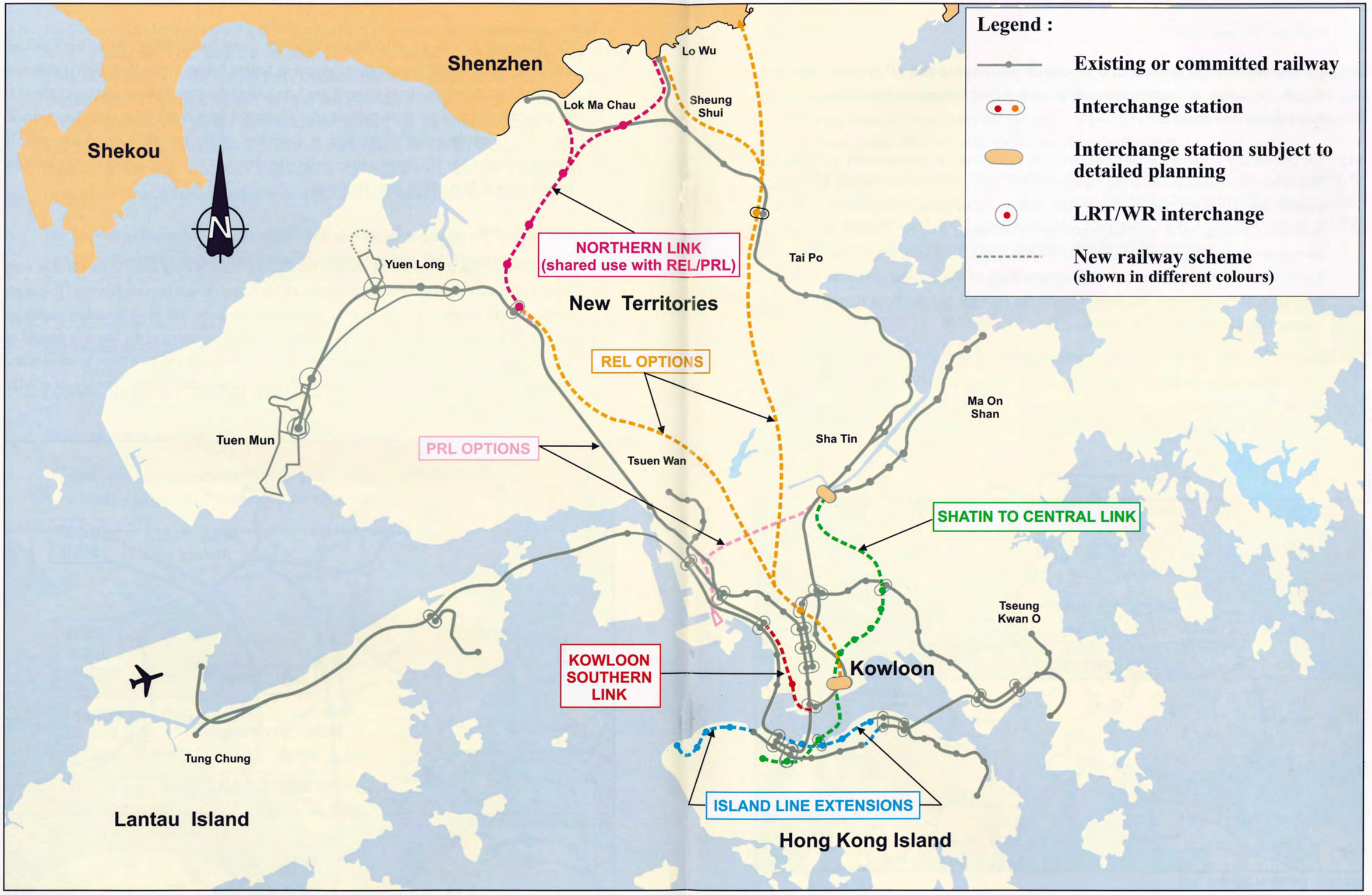


FIGURE 7: NEW RAILWAY PROJECTS IN RAILWAY DEVELOPMENT STRATEGY 2000

Regional Express Line

3.14 The Regional Express Line (REL) is an express rail service which will link the urban area with the Boundary. In addition to providing fast domestic service with limited stops, through train may also run on the REL.

3.15 The preliminary alignment of the REL will link Hung Hom to the Boundary via Shek Kip Mei. It has two route options in the New Territories, an eastern one via Fanling South and a western one via Kam Sheung Road. The eastern option may incorporate a third Rail Boundary Crossing, but this would depend on co-ordinating with the planning intentions of the Shenzhen side. A possible extension of the REL from Hung Hom to the Central on Hong Kong Island would further enhance the attractiveness of the corridor given the increasing integration of the economic activities between the HKSAR and the Pearl River Delta. The layout of the REL is shown in **Figure 8.**

3.16 The annual cross-boundary passenger traffic has been growing at 18-20% since mid 1996. The average daily number of cross-boundary passengers at Lo Wu now reaches 220,000. Should the present growth rate continue, it may be necessary to start planning the REL early in order that this new rail corridor could be provided in a timely manner.

FIGURE 8: REGIONAL EXPRESS LINE

Port Rail Line

3.17 The Port Rail Line (PRL) is a new freight rail connection from Lo Wu to a new port rail terminal at Kwai Chung. The line has two route options, one as part of West Rail via Kam Sheung Road to Kwai Chung and the other via East Rail and then a new tunnel from Tai Wai to Kwai Chung. The two route options are shown in **Figure 9.**

3.18 Allowing direct cross-boundary freight service through Lo Wu to the Kwai Chung ports, the PRL would support the growth of the port cargo by tapping freight from the deep hinterland of the Mainland and could benefit the SAR's economy. The implementation of the PRL hinges on growth of the rail-borne freight to the Kwai Chung ports.

FIGURE 9: PORT RAIL LINE

Hung Hom as the Mass Transportation Centre

3.19 In addition to the new railway schemes, RDS-2 also investigated the role and function of a Mass Transportation Centre (MTC). The MTC differs from other public transport interchanges. It provides for terminal facilities for cross boundary inter-city services with the necessary customs and immigration facilities. The existing Hung Hom Terminal, which is centrally located in the HKSAR is already functioning as an MTC with good capability for expansion.

3.20 Hung Hom will be the preferred landing point of the FHC on Kowloon side. Other rail lines including the East Rail, West Rail and EKL will also be connected to Hung Hom, where many cross-harbour tunnel bus routes are providing convenient interchange between the rail and the road mode of transport. Hung Hom should remain as the MTC for the HKSAR.

Benefits of the expanded railway network

3.21 Railways will be vital in supporting the economic, social and population growth of the HKSAR in the next 15 years. Implementing the network expansion will facilitate closer economic and social linkages between the HKSAR and the Mainland, particularly Guangdong and the Pearl River Delta. Investing in the Network will yield the following benefits to the community:

(a) Improving accessibility

Implementing the Network would place about 70% of the population and about 80% of job opportunities within one kilometre of a railway station. The Network would facilitate the development of the strategic growth areas in the New Territories and development and redevelopment in the Metro area.

(b) Realization of integrated transport planning

The comprehensive Network coverage will facilitate co-ordination with other public transport services at key interchange stations. This will enable the realization of integrated transport planning in which railways will form the backbone of Hong Kong's transport system, while other public transport services will operate in a co-ordinated manner to maximise efficiency of service to passengers in terms of time and cost and to meet forecast demand.

(c) High level of transport service

The comprehensive Network will offer fast and reliable travel throughout the SAR. Typical journey times are as follows:

Tin Shui Wai to Central	41 minutes
Lo Wu to Admiralty	50 minutes
Tsuen Wan to Kai Tak	32 minutes
Tseung Kwan O to Central	21 minutes

(d) Meeting cross-boundary demand

The Network will be able to meet the growing cross-boundary demand, which is forecast to increase by over 3 times by 2016.

(e) Economic Return

The investments in the Railway Network will yield an economic internal rate of return of more than 15%.

(f) Environmental benefits

The Strategic Environmental Assessment carried out as part of the RDS-2 has concluded none of the new railway schemes will present insurmountable environmental problems, though all have some potential environmental impacts. These will be addressed during the design and development process of individual railway scheme.

On completion, the Network would increase the rail share in the public transport system from 31% at present to 43% by 2016, or in terms of the distance travelled by passengers, from 34% to almost 60%. This would reduce the reliance on road-based transport and translate to environmental benefits amounting to a reduction of air pollutants by some 600 tonnes of NO_X and respirable suspended particulates per year and 160,000 tonnes of CO_2 per year.

Implementation

3.22 In terms of implementation, the actual sequence and timing of the six new rail projects would be subject to more detailed engineering feasibility studies, having regard to the building up of transport demand, the pace of development of the strategic growth areas, project interfaces and consultation with the two Corporations. The implementation of some of the projects could be phased to meet demand.

3.23 As regards the implementation arrangement, the Island Line Extensions, being formed from extensions of the MTR system, have to be built and operated by MTRC. On the other hand, the KSL and NOL have to be undertaken by KCRC in order to facilitate their proper integration with the East Rail and the West Rail.

3.24 In awarding other new railway projects which are not natural extensions of any existing line, the Government shall adopt an open and fair approach by inviting the two Railway Corporations to bid for the projects. The Government shall specify the terms with which the two Corporations can bid on a level playing field basis. In considering the proposals, the Government would take into account all relevant factors including technical, financial and other alternative suggestions by the Corporations which would enhance the cost-effectiveness of the projects.

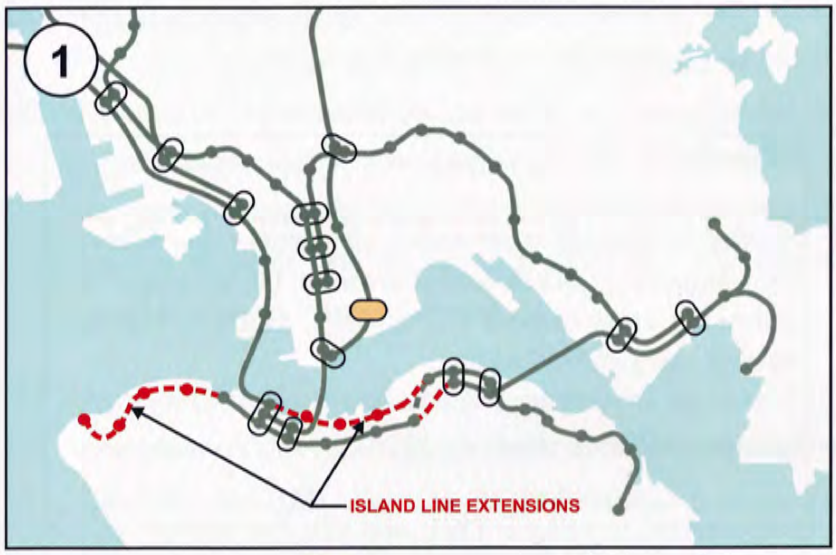
3.25 As the Shatin to Central Link is not a natural extension of an existing line and connects to both the MTR and the KCR networks, it may be undertaken by either Corporation. The two Corporations will be invited to put forward competitive proposals on its implementation. The REL is also a potential candidate for bidding by the two Corporations, if it is planned on the basis of a third rail passenger crossing, in addition to Lo Wu and Lok Ma Chau. The decision on how best to take forward this project would be subject to more detailed feasibility study on the alignment of the REL.

3.26 As regards the potential PRL, it is a natural KCRC project. KCRC will be invited to explore in more detail how the project can be implemented and Government will render full support in its planning and implementation.

3.27 Subject to future developments, the implementation of the new schemes in Railway Development Strategy 2000 could be grouped into six packages as follows:-

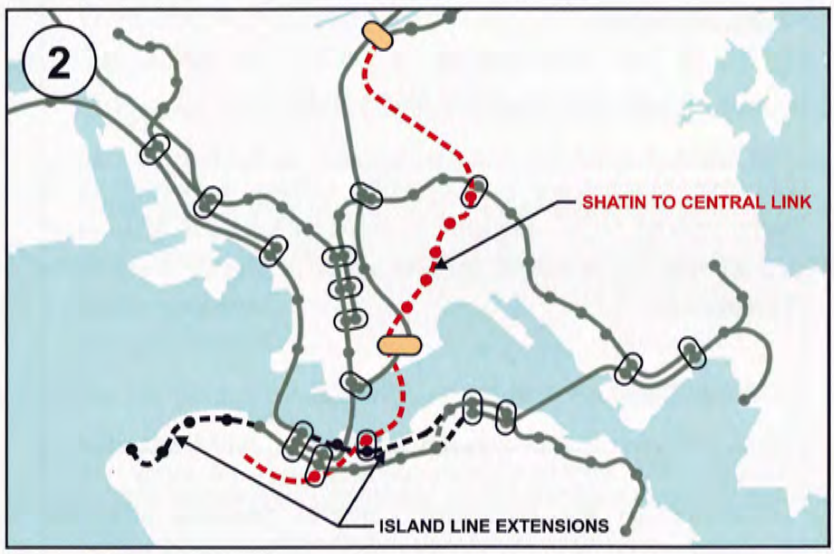
Package	Operator	Remarks
Shatin to Central Link (TDL/EKL /FHC)	MTRC/KCRC	Needed to provide a strategic rail corridor for relieving ER, supporting South East Kowloon Development and enhancing cross-harbour rail capacity. Operator selection through competitive bidding. Likely completion window: 2008-2011
Island Line Extensions (NIL and WIL)	MTRC	NIL needed to relieve TWL and ISL but subject to the availability of the Central and Wanchai Reclamation. WIL needed to support development and urban renewal in Western District Likely completion window: 2008-2012
KSL	KCRC	Improves east-west connectivity across Kowloon and helps relieve TCL. Dependent on development of Lantau Island and the strategic growth areas in North West New Territories Likely completion window: 2008-2013
NOL	KCRC	Needed to improve accessibility of Western New Territories to the Boundary. Serves planned strategic growth areas at Ngau Tam Mei, San Tin and Au Tau Likely completion window: 2011-2016
REL	MTRC/KCRC	Preliminary planning to proceed early. Subject to alignment, operator selection by competitive bidding. Implementation depends on cross-boundary traffic build-up.
PRL	KCRC	KCRC to investigate into implementation opportunities. Implementation depends on cross-boundary freight build-up.

A possible development sequence of the first three packages is shown in **Figure 10**.



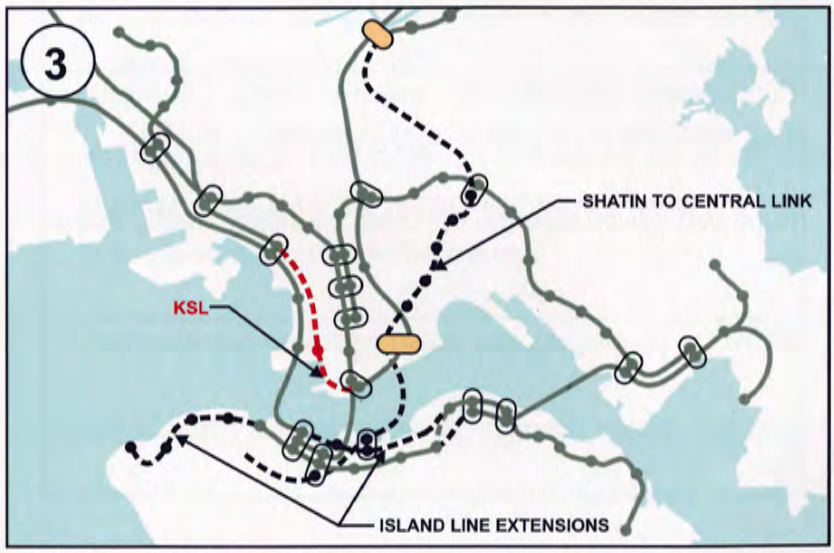
Stage 1 :

Implementation of the Island Line Extensions. Completion of the NIL should precede the WIL in order not to overload the ISL.



Stage 2 :

Implementation of the Shatin to Central Link. The link can be completed in phases.



Stage 3 :

Implementation of the Kowloon Southern Link. This links the KCR West Rail round the Kowloon peninsula to Hung Hom and provides convenient interchange for passengers.

FIGURE 10: A POSSIBLE DEVELOPMENT SEQUENCE OF THE RAILWAY NETWORK

Order of costs

3.28 The order of costs estimated for the component and stand-alone schemes are listed in **Table 1**.

Table 1 Order of Cost Estimates

Scheme	Cost Estimate ($ billion)
NIL	9-10
FHC	10-16
EKL	12-14
TDL	3-5
CEW Extension	2
KSL	7-8
NOL	9
WIL	10
REL	13-17
PRL/PRT	5-9
TOTAL	**80-100**

Notes: (1) Order of cost estimates are in 1998 prices and include land costs.
(2) A range is given for the cost estimates for schemes with alternative arrangement.
(3) The higher NIL costs include a VIP station for interchange with FHC.
(4) CEW Extension starts from HKP or ADM respectively under the VIP and EXH/ADM options.
(5) Costs for REL exclude rolling stock.

3.29 The costings will need to be refined following detailed financial, engineering and environmental studies, to be carried out in conjunction with the implementation of any railway projects.

Long term railway development possibilities

3.30 There are other rail schemes which have been investigated in RDS-2. These include South Hong Kong Island Line, the Fifth Rail Harbour Crossing, the Outer Western Corridor, the Deep Bay Link, Chek Lap Kok Link and the East-west Kowloon Link (see **Figure 11**). These projects do not command priority at this stage as the traffic demand has yet to warrant a mass carrier. They should be further investigated if planning parameters change significantly.

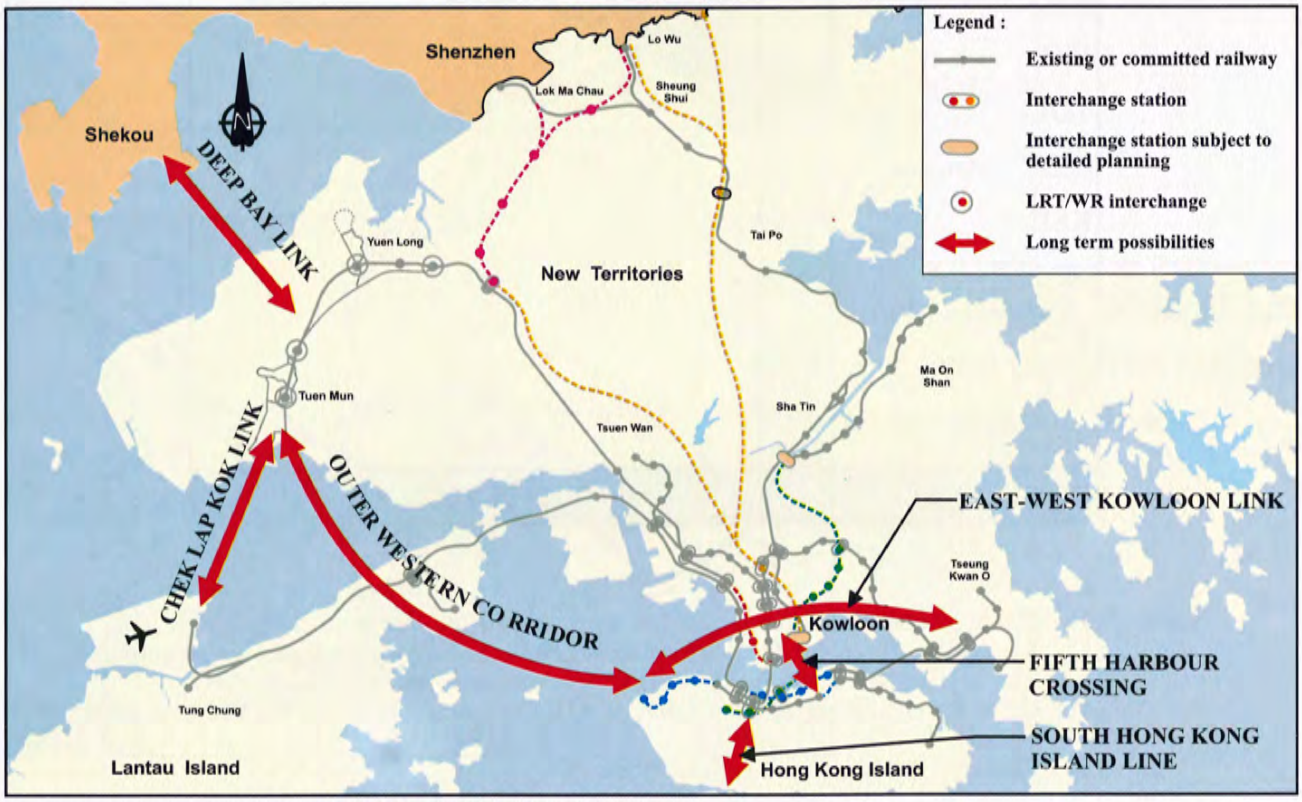


FIGURE 11: LONG TERM RAILWAY DEVELOPMENT POSSIBILITIES

STATION ABBREVIATIONS

ADM	Admiralty	MTW	Ma Tau Wai
AUT	Au Tau	NAC	Nam Cheong
BEL	Belcher Garden	NOP	North Point
CAB	Causeway Bay	NTK	Ngau Tau Kok
CEN	Central	NTM	Ngau Tam Mei
CEW	Central West	OLY	Olympic
CHG	Chevalier Garden	PEB	Penny's Bay
CHH	Choi Hung	POA	Po Lam
CHW	Chai Wan	PRE	Prince Edward
CIO	City One	PRT	Port Rail Terminal
CLK	Chek Lap Kok	QUB	Quarry Bay
CSW	Cheung Sha Wan	SAT	San Tin
DIH	Diamond Hill	SHT	Shatin
DVR	Des Voeux Road	SHM	Shek Mun
ETS	East Tsim Sha Shui	SHS	Sheung Shui
EXH	Exhibition	SHW	Sheung Wan
FAN	Fanling	SIH	Siu Hong
FAS	Fanling South	SKM	Shek Kip Mei
FOH	Fortress Hill	SKS	Sha Kok Street
FOT	Fo Tan	SKW	Shau Kei Wan
GIA	Gillies Avenue	SSP	Sham Shui Po
HAH	Hang Hau	STT	Sha Tin Tau
HEO	Heng On	SWH	Sai Wan Ho
HFC	Heng Fa Chuen	SYP	Sai Ying Pun
HKP	Hong Kong Park	TAK	Tai Koo
HMT	Ho Man Tin	TAM	Tamar
HOK	Hong Kong	TAP	Tai Po
HUH	Hung Hom	TAW	Tai Wai
JOR	Jordan	TIH	Tin Hau
KEN	Kennedy Town	TIK	Tiu Keng Leng
KOB	Kowloon Bay	TIS	Tin Shui Wai
KOT	Kowloon Tong	TKO	Tseung Kwan O
KOW	Kowloon	TKS	Tseung Kwan O South
KSR	Kam Sheung Road	TKW	To Kwa Wan
KTA	Kai Tak	TST	Tsim Sha Tsui
KTU	Kwu Tung	TSW	Tsuen Wan
KWF	Kwai Fong	TSY	Tsing Yi
KWH	Kwai Hing	TUC	Tung Chung
KWT	Kwun Tong	TUM	Tuen Mun
LAK	Lai King	TWH	Tai Wo Hau
LAT	Lam Tin	TWO	Tai Wo
LCK	Lai Chi Kok	TWW	Tsuen Wan West
LEH	Leighton Hill	UNI	University
LEO	Lee On	VIP	Victoria Park
LMC	Lok Ma Chau	WAC	Wan Chai
LOF	Lok Fu	WCS	Wan Chai South
LOP	Long Ping	WKN	West Kowloon
LOW	Lo Wu	WTS	Wong Tai Sin
MEF	Mei Foo	YAO	Yam O
MKK	Mong Kok (KCR)	YAT	Yau Tong
MOK	Mong Kok (MTR)	YMT	Yau Ma Tei
MOS	Ma On Shan	YUL	Yuen Long

RAILWAY LINES ABBREVIATIONS

EKL	East Kowloon Line
ER	East Rail
FHC	Fourth Rail Harbour Crossing
ISL	Island Line
KSL	Kowloon Southern Link
LRT	Light Rail Transit
NIL	North Hong Kong Island Line
NOL	Northern Link
PBL	Penny's Bay Rail Link
PRL	Port Rail Line
REL	Regional Express Line
SIL	South Hong Kong Island Line
TCL	Tung Chung Line
TDL	Tai Wai to Diamond Hill Link
TKE	Tseung Kwan O Extension
TWL	Tsuen Wan Line
WIL	West Hong Kong Island Line
WR	West Rail