OUR FUTURE RAILWAY

我們未來的鐵路

Stage 2 Public Engagement Consultation Document

運輸及房屋局
Transport and Housing Bureau

路政署
Highways Department

AECOM
In association with
MVA HONG KONG LTD.

Contents

1. Foreword

1.1 The consultancy study for the Review and Update of the Railway Development Strategy 2000 commenced in March 2011. The objective of the study is to update the long-term railway development blueprint formulated in the Railway Development Strategy 2000 (RDS-2000) having regard to the latest development of our society.

1.2 When the RDS-2000 was announced in May 2000, only six railway lines and the Light Rail were operating in Hong Kong (see Fig. 1.1). To implement the policy of using railways as the backbone of our passenger transport system, the local railway network expanded rapidly with eight railway projects completed between 2002 and 2009.

1.3 Currently, the total number of daily public transport passenger trips in Hong Kong exceeds 10 million. Our railway network carries over 4.5 million passengers per day, accounting for about 38% of all public transport passenger trips. We are taking forward five railway projects in full swing. They include the West Island Line, Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, South Island Line (East), Kwun Tong Line Extension and Shatin to Central Link . These five railway projects will be completed between 2014 and 2020 (see Appendix 1). Upon completion, the total length of railways in Hong Kong will be increased to more than 270 km. There will be 99 railway stations and 68 light rail stations, serving areas inhabited by more than 70% of the local population and forming an easily accessible mass transit network. It is anticipated that the rail share of local public transport trips will increase to 43%, which further underlines our policy of using railways as the backbone of our passenger transport system (see Fig. 1.2).

1.4 As stated by the Chief Executive in the 2013 Policy Address, public demand for land is generated as much from the surging population as from people's aspirations for more space to alleviate their cramped living conditions. The Government will continue to adopt a multi-pronged approach and step up its efforts to meet housing and other needs. For this purpose, we will increase the supply of land in the short, medium and long terms through optimal use of developed land and identifying new land for development at the same time. Amongst these measures, some longer-term ones include planning the North East New Territories New Development Areas and Hung Shui Kiu New Development Area (HSK NDA), developing Lantau Island (including conducting the "Tung Chung New Town Extension Study" to explore the potential of developing Tung Chung into a new town with more comprehensive and better developed community facilities) etc., with a view to building up a "land reserve" to meet future demands in a timely manner and improve the living environment of our citizens.

1.5 Development of rail transport will not only significantly speed up passenger flow, alleviate road traffic congestion and reduce vehicle-induced air pollution; but also release the development potential of peripheral areas and facilitate local development and economic activities. If railway planning and land development can be properly integrated, it may create synergy in broadening the living space for residents and promoting developments on various aspects in Hong Kong.

1.6 Railway projects involve enormous investment of public funds and have profound impacts on society, people's livelihood and economic development, thus different sectors of the society may offer diverse views and recommendations. The issue on how to cohesively integrate railway planning and land development will need to be examined within the community of Hong Kong.

1.7 It often takes eight to ten years for a railway project to take shape from idea formulation, conceptual stage, stakeholder consultation, detailed design, to actual construction and completion. As such, we should be forward looking by conducting an early review and update of the existing railway development strategy. Early consultation will allow the public to discuss and participate in the planning process, so that we can work together to map out our future railway development to meet transport demand in a cost-effective manner, and facilitate the commencement of relevant detailed studies of individual projects in a timely manner.

Fig. 1.1: Hong Kong's Railway Network in 2000

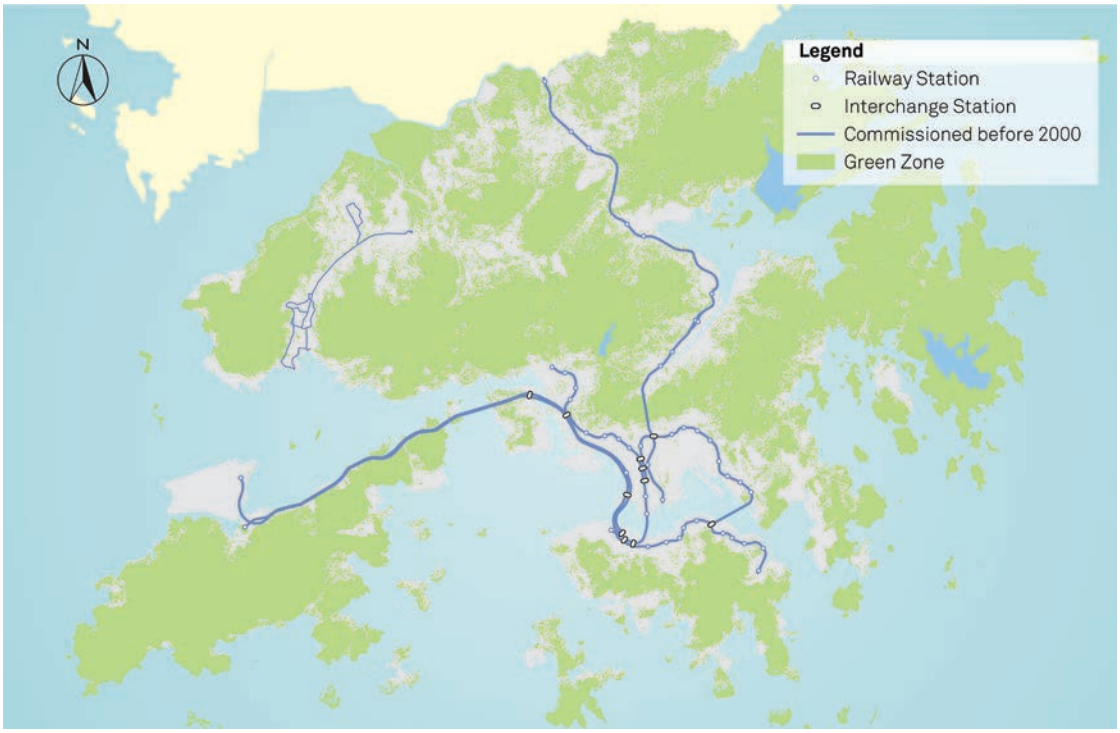
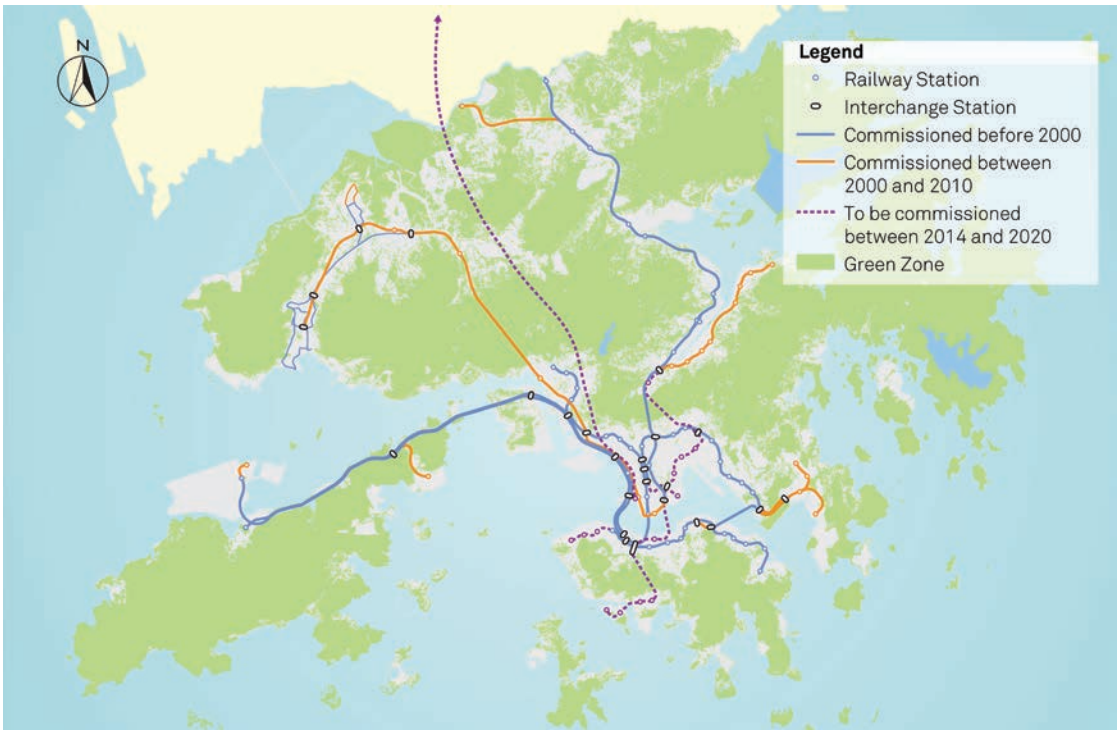


Fig. 1.2: Hong Kong's Railway Network in 2020



2. Study Focus and Methodology

Study Focus

2.1 On the basis of the RDS-2000, this study assesses whether new railway projects or improvements to the existing railway network are required –

(a) To cover more areas and provide railway service to more people;
(b) To connect major infrastructures and new development areas to enhance their accessibility; and
(c) To relieve bottlenecks of the railways and trunk roads

in order to review and update the long-term railway development blueprint of Hong Kong.

Study Methodology

2.2 During the study process, the consultant thoroughly studies the latest planning data and information. It explores ways to meet the need for railway service in future key development areas before revisiting proposals to improve service of the railway network in developed areas. The consultant reviews and rationalises various conceptual railway schemes, some of which have been proposed in the RDS-2000 and some by the Government or the public.

2.3 In general, the consultant conducts the study and consultation process in two stages, with a view to recommending a new railway development blueprint that is cost-effective and able to meet the needs of the society.

Stage 1 Study and Consultation

(a) **Conduct passenger transport demand forecasts:** The consultant examined the latest planning information to analyse the long-term local passenger transport demands and forecast major growth areas, having regard to the development potential and needs of various districts in Hong Kong;

(b) **Review of the demand for major regional railway corridors serving key development areas:** On the basis of the above demand forecasts, the consultant conducted a preliminary review of the demand for new major regional railway corridors in key development areas to enhance railway coverage for associated areas and major infrastructures. Conceptual railway schemes were preliminarily assessed from different perspectives, such as engineering, environmental impact, operation and service levels etc. , with the findings reported in the Stage 1 study; and

(c) **Public consultation:** The public was consulted on the preliminary ideas and conceptual schemes of the major regional railway corridors serving key development areas in future. Analysis results on the major functions, planning considerations, traffic demand, as well as constraints from technical, environmental and other aspects were presented to allow early engagement of the public in the discussion and planning process.

2.4 During the Stage 1 public engagement exercise between 20 April and 21 July 2012, we put forward three major regional railway corridors – the Hong Kong-Shenzhen Western Express Line, Northern Link and Coastal Railway between Tuen Mun and Tsuen Wan (Tuen Mun to Tsuen Wan Link) (see Fig. 2.1). We received over 1,400 written responses in total. Feedback by the general public generally welcomed the Government's initiative to conduct a long-term railway development study, with the key findings summarised as follows –

(a) While most respondents considered that population distribution, land use planning and housing development potential are the crucial factors in relation to the railway alignment and its cost-effectiveness, some scholars and professionals highlighted that potential development projects in different regions of Hong Kong may impact on the patronage forecast. They hoped that this railway study could be coordinated with other land planning studies to achieve better planning benefits;

(b) Most people supported the idea of concentrating additional population in future in a smaller number of newly developed areas with relatively higher density, with a view to increasing the viability of railway service in these areas. Scholars and professionals also agreed that railway stations could be treated as the cores of regional development; yet, they emphasised that the development density of any top-side development above the stations should not be prohibitively high, and these developments should be connected with convenient pedestrian networks to better link with the communities; and

(c) Most members of the public, scholars and professionals considered that railway operators should be responsible for the profits and losses of new railways, and that transit-oriented development models may be adopted to increase the railway patronage. Some other scholars considered that new railway projects may face the issue of diminishing marginal return as Hong Kong has entered into a considerably mature development stage. As such, future railway developments might be more likely to be justified by social needs rather than the cost-effectiveness of the railway projects per se.

Fig. 2.1: Major Regional Railway Corridors proposed in the Stage 1 Study

2.5 On the other hand, people from different sectors of the community were very concerned about the planning of other railway projects, and looked forward to our early consideration of the conceptual schemes other than those of the major regional railway corridors. The main opinions include –

(a) **Optimisation of existing railways:** Apart from planning for new major regional railway corridors, some people suggested that we should also pay attention to improve and optimise the existing railway network with smaller-scale projects. These projects may also be considerably cost-effective and further facilitate people to use our railway system (in particular the local railway service). We agree that enhancement schemes for existing railways should be considered in equal weighting, and have asked the consultant to explore various line extensions, wherever technically feasible, to better serve the more localised passenger demand;

(b) **Integration with land development:** Quite a number of commentators indicated that railway development and urban development are inter-related. On one hand, a region needs an excellent transportation infrastructure to fully unleash its development potential; on the other hand, the mass transportation efficiency of a railway project may be reduced due to the lack of development opportunities in a region. We agree that it is necessary to properly integrate transport and land planning, and have requested the consultant to take into account the planning conditions of the potential new development areas in studying relevant railway projects for better coordination; and

(c) **Improvement of holistic network:** Some observers stated that railways should be viewed as an interconnected network rather than independent lines. For the planning of new railway projects in future, they suggested that the Government should not only consider the benefits of the individual lines, but also conduct a holistic assessment of their impacts on the entire network. We agree that the patronage distribution of the railway network may change upon completion of the five railway projects underway, given that passengers from different regions will be able to interchange among various railway lines at a greater number of stations. To facilitate more comprehensive planning, we have requested the consultant to carry out a holistic analysis on the usage of the railway network, as well as studying the possible impacts of the five railway projects underway on other existing railway lines.

Stage 2 Study and Consultation

2.6 Having completed the Stage 1 public engagement exercise, the consultant started the Stage 2 study on two focused areas –

(a) **Optimisation and integration of railway network:** The conceptual schemes of major regional railway corridors were optimised in view of the public comments collected in the Stage 1 public engagement exercise, and integrated into the existing railway network (with adjustments, additions and deletions where necessary), with a view to developing a holistic and more cost-effective railway development framework for Hong Kong; and

(b) **Study of local enhancement schemes:** The consultant forecast the patronage of the integrated railway network to assess potential bottleneck locations, with particular reference to the usage of the urban sections of the existing railway network. As the urban area adopts a high development density with relatively more comprehensive railway coverage, the consultant mainly focused on studying local enhancement schemes, such as assessing the need for constructing parallel lines, line extensions or spur lines, or adding new stations etc. , to increase the overall capacity of the railway network and reduce road-based feeder needs. These results assisted in the drafting of a territory-wide long-term railway development blueprint.

2.7 This document mainly covers the local enhancement schemes, including those relieving the loading of the railway network, extending the coverage of existing railway lines and supporting new development areas, such as the North East New Territories New Development Areas and HSK NDA, amongst other initiatives like conducting the "Tung Chung New Town Extension Study", mentioned by the Chief Executive in the 2013 Policy Address.

2.8 The Chief Executive also mentioned in the 2013 Policy Address other measures regarding long-term land supply, including developing the New Territories North (such as tracts of land released from the Closed Areas), studying reclamation on an appropriate scale outside Victoria Harbour, and conducting a study on the long-term strategy for rock cavern and underground space development. At the same time, he mentioned about actively considering relaxing or lifting a moratorium, which is a restrictive administrative measure (regarding the sale of new land or modification to lease), currently in force in Pokfulam and the Mid-Levels. Given that these proposals are still at a preliminary stage, with the specific locations and planning purposes of potential development sites yet to be confirmed, this document does not specifically deal with these land development projects.

2.9 Similar to the major regional railway corridors discussed in the Stage 1 public engagement exercise, the local enhancement schemes identified by the consultant at this stage are conceptual schemes considered to be worthy of further public discussion in the preliminary study. These schemes are presented for the purpose of collecting public opinions. In the subsequent study, the consultant will conduct more in-depth assessments and benefit analysis to verify the technical feasibility and economic benefits of the preferred proposals.

2.10 Upon completion of the Stage 2 public engagement exercise, we will request the consultant to collate the public opinions collected at both stages, such that the planning of the major regional railway corridors and local enhancement schemes can be further optimised in a coordinated manner. The consultant will provide recommendations on future railway development which serve as the basis for the formulation of the future railway development strategy in Hong Kong.

3. Stage 2 Study Findings

Traffic Capacity of Existing Railways

3.1 At present, the railway network of Hong Kong consists of ten railway lines, coupled with the Light Rail network in the northwestern New Territories. Depending on the design, each railway line has a different traffic capacity.

3.2 In general, the traffic capacity of a railway line is measured in terms of its one-direction passenger capacity per hour. The more passengers a railway line may carry, the higher the traffic capacity. Various factors come into play, including train type, number of cars in a train, train frequency, signalling system and alignment etc.

3.3 Currently, the East Rail Line has the highest passenger capacity with a designed maximum one-direction loading of 101,000 passengers per hour. The Kwun Tong Line, Tsuen Wan Line, Island Line, Tseung Kwan O Line, Tung Chung Line, West Rail Line and Ma On Shan Line are major railway lines as well, facilitating passenger trips across different districts. The Disneyland Resort Line and Airport Express were implemented to support the Hong Kong Disneyland and Hong Kong International Airport respectively, and are not intended to address the daily travelling needs of most residents. Both railway lines can effectively address the corresponding transport demands despite having a lower passenger capacity as compared with the major railway lines (see Table 3.1).

Table 3.1: Designed Maximum One-direction Passenger Capacity of Different Railway Lines

Railway line	Designed maximum one-direction passenger capacity (pax/hour)
East Rail Line	Approximately 101,000
Kwun Tong Line, Tsuen Wan Line, Island Line, Tseung Kwan O Line	Approximately 85,000
Tung Chung Line	Approximately 66,000
West Rail Line	Approximately 64,000
Ma On Shan Line	Approximately 32,000
Disneyland Resort Line	Approximately 10,800
Airport Express	Approximately 10,000

3.4 Due to safety considerations and limitations on the signalling system, there is an upper limit of the train frequency for each railway line. Moreover, train types and numbers of cars to be used are restricted by the track and station design. In case a railway line can no longer cater for the growth in transport demand, it may be necessary to consider building parallel lines to increase the traffic capacity.

Railway Usage in Peak Hours

3.5 On a normal day, two traffic peaks on the existing railway lines can be observed in the morning and evening respectively. During morning peak hours, most passengers travel from residential areas to the Central Business Districts (CBDs). The traffic flow reverses in the evening peak when passengers depart from the CBDs for the residential areas.

3.6 As most residents commute for work at about the same time each morning and finish work at different hours of the day, railway lines are generally more crowded in the morning peak than the evening peak. In response to this characteristic traffic pattern, the Mass Transit Railway Corporation Limited (MTRCL) generally operates at a higher train frequency in the morning to cater for passenger needs.

3.7 According to a patronage survey in 2011, the Tsuen Wan Line operated 28 trains per hour during morning peak hours. It was revealed that the section from Tsim Sha Tsui Station to Admiralty Station was the busiest with an average train loading at approximately 74%. The average train loadings of the Tseung Kwan O Line and Island Line both exceeded 70% during morning peak hours, while those of the Tung Chung Line and Ma On Shan Line were relatively low (see Table 3.2).

Table 3.2: Usage of Major Railway Lines during Morning Peak Hours in 2011

Busiest section of major railway lines	Train frequency during morning peak hours (per hour)	Average train loading during morning peak hours [1]
Tsuen Wan Line – Tsim Sha Tsui Station to Admiralty Station	28	Approximately 74%
Tseung Kwan O Line – Yau Tong Station to Quarry Bay Station	24	Approximately 72%
Island Line – Tin Hau Station to Causeway Bay Station	30	Approximately 70%
East Rail Line – Tai Wai Station to Kowloon Tong Station	22	Approximately 69%
Kwun Tong Line – Shek Kip Mei Station to Prince Edward Station	28	Approximately 65%
West Rail Line – Kam Sheung Road Station to Tsuen Wan West Station	20	Approximately 65%
Tung Chung Line – Kowloon Station to Hong Kong Station	15	Approximately 61%
Ma On Shan Line – Che Kung Temple Station to Tai Wai Station	20	Approximately 54%

3.8 During evening peak hours, the sections from Wan Chai Station to Causeway Bay Station of the Island Line and Admiralty Station to Tsim Sha Tsui Station of the Tsuen Wan Line remained considerably busy with their average train loadings edging around 70%, while the average train loadings of the East Rail Line and Kwun Tong Line dropped to below 65%. The average train loadings of other railway lines were even lower, ranging from 41% to 58% in the evening peak (see Table 3.3).

[1] The average train loading during morning/evening peak hours is derived from the one-direction patronage between the two busiest stations within an hour in the morning/evening peak, divided by the one-direction passenger capacity of the trains operated along the railway line. The higher the percentage, the busier the railway lines during peak hours.

Table 3.3: Usage of Major Railway Lines during Evening Peak Hours in 2011

Busiest section of major railway lines	Train frequency during evening peak hours (per hour)	Average train loading during evening peak hours[1]
Island Line – Wan Chai Station to Causeway Bay Station	26	Approximately 71%
Tsuen Wan Line – Admiralty Station to Tsim Sha Tsui Station	29	Approximately 69%
East Rail Line – Kowloon Tong Station to Tai Wai Station	17	Approximately 64%
Kwun Tong Line – Prince Edward Station to Shek Kip Mei Station	25	Approximately 64%
West Rail Line – Tsuen Wan West Station to Kam Sheung Road Station	15	Approximately 58%
Tseung Kwan O Line – Quarry Bay Station to Yau Tong Station	24	Approximately 55%
Tung Chung Line – Hong Kong Station to Kowloon Station	15	Approximately 42%
Ma On Shan Line – Tai Wai Station to Che Kung Temple Station	15	Approximately 41%

3.9 Based on actual passenger throughput, the consultant considers that the need for relieving railway traffic is more critical for only one or two hours in the morning. Where practicable, one should first investigate whether the train frequency along the existing railway lines can be further increased during morning peak hours. If the railway line is operating with a close-to-limit train frequency, it may be more effective to relieve the traffic by implementing a new railway project.

Habits of Railway Passengers

3.10 Apart from the traffic capacity of various railway lines, the consultant considers that the habits of railway passengers should also be taken into consideration for a more detailed analysis on traffic relief.

3.11 Under most circumstances, railway passengers will not uniformly occupy the space on trains, resulting in an under-utilisation of train capacity. In a single train, cars closest to the lobby escalator generally attract more passengers, while those located at the far ends of a platform have relatively fewer passengers. Within a single car, most passengers generally stay close to the doors and few would stand at the connecting corridor between the cars. In this connection, the consultant highlights that the loading of a railway line is unlikely to reach near 100% in daily operation.

3.12 Nowadays, passengers have higher expectations on railway service. This observation can be deduced from the usage of the Nathan Road Section (comprising Prince Edward, Mong Kok, Yau Ma Tei, Jordan and Tsim Sha Tsui Stations), a busier section of the railway network in Hong Kong. In the early 1980s, the Nathan Road Section carried approximately 87,000 passengers per hour in a single direction, but merely around 79,000 passengers in the early 1990s. The loading further dwindled to around 51,600 passengers in 2011. Although actual statistics show that the number of railway passengers in Hong Kong has risen year by year, the peak patronage along the Nathan Road Section has been on a decline.

3.13 To account for this trend, the consultant considers that passenger expectations on personal space on trains have gradually increased. In the early years, the section from Tsim Sha Tsui Station to Admiralty Station, which follows the Nathan Road Section, was the sole harbour-crossing of the railway network in Hong Kong. Passengers would attempt to squeeze into the trains even when the cars were crowded, resulting in a larger traffic flow. Nowadays, passengers have more options for harbour-crossing railway lines, which operate at a higher train frequency. If a train appears to be rather crowded, passengers might rather wait for another train instead of squeezing into the train to continue their journeys, resulting in a decrease in the train loading.

3.14 It is worth noting that an increasing number of railway passengers read newspapers and use mobile devices, such as tablet computers or smart phones, during their trips in recent years. Personal space on trains may have become their growing concerns. To better meet passenger expectations, the consultant considers that the need for railway relief should be reviewed in view of the habits of railway passengers in future.

Passenger Demand for Harbour-crossing Railway Service

3.15 The two busiest sections of the railway network in Hong Kong are both harbour-crossing sections, namely the sections from Tsim Sha Tsui Station to Admiralty Station of the Tsuen Wan Line and Yau Tong Station to Quarry Bay Station of the Tseung Kwan O Line. In addition, the section from Kowloon Station to Hong Kong Station carries the highest number of passengers along the Tung Chung Line. This somehow reflects the huge passenger demand for harbour-crossing railway service.

3.16 Apart from the three harbour-crossing railway lines (i.e. the Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line), the Hung Hom to Admiralty Section of the Shatin to Central Link is expected to be commissioned in 2020, which will extend the existing East Rail Line from Hung Hom across the harbour to the Hong Kong Convention and Exhibition Centre (HKCEC) and Admiralty. This new North South Corridor will serve as the Fourth Harbour-crossing railway line, and is expected to relieve the busy conditions on the harbour-crossing section of the Tsuen Wan Line.

3.17 The previous RDS-2000 raised the possibility of constructing a Fifth Harbour-crossing railway line in the long run; nevertheless, the population growth of Hong Kong thereafter has been lower than previously expected, resulting in a drop in the transport demand. Based on the latest forecast, the consultant estimates that the average train loadings of the four harbour-crossing railway lines in Hong Kong will maintain at 60% or below during morning peak hours in 2031, and considers that there is no imminent need to build a Fifth Harbour-crossing railway line (see Table 3.4).

Table 3.4: Patronage Forecast of the Four Harbour-crossing Railway Lines during Morning Peak Hours in 2031

Railway line	Busiest harbour-crossing section in single direction	One-direction passenger capacity estimated by the consultant (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
Tsuen Wan Line	Tsim Sha Tsui Station to Admiralty Station	Approximately 85,000	Approximately 51,000	Approximately 60%
Tseung Kwan O Line	Yau Tong Station to Quarry Bay Station	Approximately 85,000	Approximately 42,000	Approximately 49%
North South Corridor	Hung Hom Station to Exhibition Station	Approximately 80,000	Approximately 38,000	Approximately 48%
Tung Chung Line	Kowloon Station to Hong Kong Station	Approximately 66,000	Approximately 29,000	Approximately 44%

3.18 As assessed by the consultant, construction works of a Fifth Harbour-crossing railway line would most probably require reclamation in Victoria Harbour. In 2004, the Court of Final Appeal confirmed in a judgement for a judicial review the significant role of Victoria Harbour as a special asset of Hong Kong. It further specified that the presumption against reclamation in the Protection of the Harbour Ordinance can be rebutted only when the Government can establish the overriding public interest of a reclamation project. With reference to the consultant's transport analysis and technical assessment, we consider that a Fifth Harbour-crossing railway line should not be implemented prematurely before its imminent need can be adequately proven. We will continue to monitor the harbour-crossing transport demand and conduct studies in a timely manner to balance the cross-harbour passenger flows.

4. North Island Line and Siu Sai Wan Line

Background

4.1 The northshore of the Hong Kong Island is a traditional CBD of Hong Kong and home to most residents on the Island. All three existing harbour-crossing railway lines (i.e. the Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line) are connected to the northshore of the Hong Kong Island, satisfying the huge daily harbour-crossing transport demand of the residents in the New Territories and Kowloon. The existing Island Line, which currently starts at Chai Wan in the east and ends at Sheung Wan in the west, has long been serving the residential and employment population in the area, and facilitating the east-west movement of the passengers of the Hong Kong Island.

4.2 For years, it has been an important railway planning issue on how to streamline the usage of the railway system in the northshore of the Hong Kong Island and provide effective service to passengers in different regions. In 1994, the Railway Development Strategy (RDS-1) first proposed the construction of new railway lines along the northshore of the Hong Kong Island, including a North Island Line (then called the North Hong Kong Island Line) and West Island Line (then called the West Hong Kong Island Line) to serve reclamation sites in Central, Wan Chai and Green Island. In 2000, the RDS-2000 considered that the North Island Line would not only address the transport demand of the Central and Wan Chai Reclamation, but could also relieve the Island Line and Tsuen Wan Line. The RDS-2000 also amended the alignment of the West Island Line to run from Sheung Wan to Kennedy Town, instead of connecting to the Green Island Reclamation (see Fig. 4.1).

Fig. 4.1: Conceptual Schemes of the West Island Line and North Island Line in the RDS-2000

4.3 In view of the growing public concerns over the protection of the harbour, there were changes to the land planning along the northshore of the Hong Kong Island. One of these changes was the down-scaling of the Central and Wan Chai Reclamation, resulting in a lower residential and employment population forecast for the areas. This substantially undermined the function of the North Island Line in serving the reclamation sites. However, in view of the usage of the Island Line in peak hours, we consider that there is a need to review the planning of the North Island Line, especially on its role in relieving the existing railway lines. As for the West Island Line, the Government abandoned the Green Island Reclamation in 2003 and subsequently conducted a detailed study and public consultation of the railway proposal. Construction works of the project commenced in 2009 and are expected to be completed in 2014. By then, the service of the Island Line will be extended to Kennedy Town.

4.4 Separately, Siu Sai Wan, located in the northeastern shore of the Hong Kong Island, has witnessed gradual development since the 1990s. Multiple large-scale residential projects were completed successively in the district, which is now a home to approximately 60,000 residents. Some local residents consider that the Island Line should be extended to Siu Sai Wan to meet their daily travelling needs. The consultant has examined the feasibility of the relevant project in the light of the latest planning conditions under this review study.

Functions and Planning Considerations

4.5 Having evaluated the usage of the railway system in the northshore of the Hong Kong Island, the consultant opines that two factors should be considered when additional railway projects are implemented in the region –

(a) Diversion of harbour-crossing passenger traffic; and
(b) Loading of the Island Line.

Diversion of harbour-crossing passenger traffic

4.6 At present, the Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line carry cross-harbour passengers to and from the northshore of the Hong Kong Island; yet, the loadings of these three harbour-crossing railway lines are not uniform. According to a patronage survey in 2011, the section from Tsim Sha Tsui Station to Admiralty Station of the Tsuen Wan Line had the highest average train loading during morning peak hours, followed by the section from Yau Tong Station to Quarry Bay Station of the Tseung Kwan O Line. As for the Tung Chung Line, the average train loading of the section from Kowloon Station to Hong Kong Station differed greatly from those of the two other harbour-crossing sections, which remained as the lowest despite operating with substantially fewer trains per hour (see Table 4.2).

Table 4.2: Usage of the Three Harbour-crossing Railway Lines during Morning Peak Hours in 2011

Railway section	Train frequency during morning peak hours (per hour)	Average train loading during morning peak hours
Tsuen Wan Line – Tsim Sha Tsui Station to Admiralty Station	28	Approximately 74%
Tseung Kwan O Line – Yau Tong Station to Quarry Bay Station	24	Approximately 72%
Tung Chung Line – Kowloon Station to Hong Kong Station	15	Approximately 61%

4.7 As compared with morning peak hours, the railway lines were found to have lower loadings during evening peak hours. Based on the patronage survey in 2011, the section from Admiralty Station to Tsim Sha Tsui Station of the Tsuen Wan Line remained the busiest amongst the three harbour-crossing railway lines, while the average train loadings of the Tseung Kwan O Line and Tung Chung Line were less than 60%, much lower than those during morning peak hours (see Table 4.3).

Table 4.3: Usage of the Three Harbour-crossing Railway Lines during Evening Peak Hours in 2011

Railway section	Train frequency during evening peak hours (per hour)	Average train loading during evening peak hours
Tsuen Wan Line - Admiralty Station to Tsim Sha Tsui Station	29	Approximately 69%
Tseung Kwan O Line - Quarry Bay Station to Yau Tong Station	24	Approximately 55%
Tung Chung Line - Hong Kong Station to Kowloon Station	15	Approximately 42%

4.8 The harbour-crossing railway service provided by the Tsuen Wan Line is more popular. This can be attributed not only to the fact that the Tsuen Wan Line directly connects the two major CBDs in Central and Admiralty, but its alignment also runs through the central part of the Hong Kong Island and is easily accessible to passengers from both the eastern and western parts of Hong Kong. Based on the patronage distribution of the three harbour-crossing railway lines, the consultant considers that the Tung Chung Line, being geographically closer to the Tsuen Wan Line, has better conditions to accommodate more cross-harbour railway passengers. Theoretically, the Tung Chung Line can be connected to more districts on the Hong Kong Island to enhance its competitiveness, so as to redistribute the cross-harbour trips of the Tsuen Wan Line to the Tung Chung Line.

4.9 However, upon completion of the Shatin to Central Link in 2020, the existing East Rail Line will be extended from Hung Hom to the HKCEC and Admiralty to form the North South Corridor. It is expected that a considerable number of railway passengers may switch to this Fourth Harbour-crossing railway line, thus relieving the busy conditions of the harbour-crossing section of the Tsuen Wan Line. The consultant considers that the actual usage of the Tsuen Wan Line and Tung Chung Line should be closely monitored in exploring whether there is a need for implementing a new railway project along the northshore of the Hong Kong Island to divert harbour-crossing traffic.

Loading of the Island Line

4.10 The Island Line is one of the busiest railway lines with a daily average patronage of approximately 830,000 in 2011. The consultant predicts that the patronage of the Island Line may further increase to 1,400,000 trips per day by 2031 after the five railway projects underway are completed. Being connected to Sheung Wan, Central, Admiralty, Wan Chai, Causeway Bay and other districts with vibrant business activities, the Island Line caters for the commuting trips of a large employment population. Coupled with the fact that the Tseung Kwan O Line only stops at Quarry Bay Station and North Point Station, the loading of the Island Line is more substantial as cross-harbour passengers to Central often need to interchange at North Point Station and share the same train with residents from the Eastern District of the Hong Kong Island.

4.11 During morning peak hours, the demand for westbound service of the Island Line is more substantial. In 2011, the section from Tin Hau Station to Causeway Bay Station was the busiest along the railway line with an average train loading of approximately 70% (see Table 4.4). The consultant estimates that the average train loading may further increase to approximately 75% or higher by 2031.

Table 4.4: Busiest Sections of the Island Line during Morning Peak Hours in 2011

Railway section	Train frequency during morning peak hours (per hour)	Average train loading during morning peak hours
Tin Hau Station to Causeway Bay Station	30	Approximately 70%
Fortress Hill Station to Tin Hau Station		Approximately 69%
North Point Station to Fortress Hill Station		Approximately 69%

4.12 During evening peak hours, the Island Line mainly caters for eastbound traffic though at a substantially lower level. The average train loading is usually lower as compared with that during morning peak hours even though the railway line operates at a reduced train frequency. The section from Wan Chai Station to Causeway Bay Station was the busiest in the evening, with an average train loading of approximately 71% in 2011 (see Table 4.5). Based on the consultant's analysis, the one-direction traffic of this section may continue to rise by 2031. Even if the Island Line is operated with more trains during evening peak hours, the average train loading is not expected to drop significantly.

Table 4.5: Busiest Sections of the Island Line during Evening Peak Hours in 2011

Railway section	Train frequency during evening peak hours (per hour)	Average train loading during evening peak hours
Wan Chai Station to Causeway Bay Station	26	Approximately 71%
Admiralty Station to Wan Chai Station		Approximately 67%
Causeway Bay Station to Tin Hau Station		Approximately 63%

4.13 Should an additional railway project be implemented along the northshore of the Hong Kong Island, the consultant considers that its role in relieving the loading of the Island Line would only be more significant for one or two hours in the morning. On the other hand, we need to keep in view whether any additional patronage may arise along the Island Line, which further burdens its westbound traffic in the morning.

4.14 The consultant points out that the patronage of the Island Line may continue to grow in view of the population change along the Tseung Kwan O Line and eastern half of the Island Line, as well as the possibility of new developments in the Central and Western District that would attract more passengers. The consultant suggests that the usage of the Island Line should be closely monitored. This would allow us to review in a timely manner the need for railway relief, and assess whether there is sufficient traffic capacity to extend the Island Line to other districts.

Preliminary Conceptual Schemes of the Railway Proposals

North Island Line

4.15 The North Island Line is an extension of the Tung Chung Line and Tseung Kwan O Line along the northshore of the Hong Kong Island, connecting the vicinities of Tamar, the HKCEC and Victoria Park. The major function of this railway project is to relieve the existing railway network, and two possible options are put forward by the consultant –

"Swap" Scheme

4.16 Following the conceptual scheme in the RDS-2000, the "Swap" Scheme extends the Tung Chung Line and Tseung Kwan O Line in tunnels, and realigns the existing Island Line by dividing it into two separate sections.

4.17 Under this conceptual scheme, the Tung Chung Line extends eastward from Hong Kong Station and joins the eastern half of the Island Line (the section from Fortress Hill Station to Chai Wan Station), while the Tseung Kwan O Line extends westward from North Point Station and joins the western half of the Island Line (the section from Tin Hau Station to Sheung Wan Station, which will be further extended to Sai Ying Pun, Hong Kong University and Kennedy Town Stations upon the commissioning of the West Island Line). As the existing section of the Island Line from Tin Hau Station to Fortress Hill Station can no longer be operated, two new railway corridors are formed and passengers may interchange between the two at Quarry Bay Station, North Point Station or Central/Hong Kong Station (see Fig. 4.6). If this scheme is implemented, the whole journey from Tung Chung to Chai Wan would take about 52 minutes while that from Po Lam to Kennedy Town would take about 33 minutes.

Fig. 4.6: Preliminary Conceptual Scheme of the "Swap" Scheme of the North Island Line

4.18 The main advantage of the "Swap" Scheme lies in the substantial increase in the number of stations which the Tung Chung Line and Tseung Kwan O Line could directly access along the northshore of the Hong Kong Island. This could significantly enhance the competitiveness of these two harbour-crossing railway lines. Furthermore, the busiest section of the Island Line runs through North Point, Fortress Hill, Tin Hau and Causeway Bay Stations. By positioning these stations along two separate railway corridors, the scheme could reduce the likelihood of railway bottlenecks in the long run.

4.19 However, once the "Swap" Scheme is implemented, the operation of the Island Line would be severed into two halves. This would bring significant changes to the east-west movement along the northshore of the Hong Kong Island. In future, residents in the Eastern District of the Hong Kong Island would not have direct access to the stations in the western half of the Island Line (including Sheung Wan, Central, Admiralty, Wan Chai, Causeway Bay and Tin Hau Stations), while residents in the Central and Western District and Wan Chai District of the Hong Kong Island would not have direct access to the stations in the eastern half of the Island Line (including Fortress Hill, Tai Koo, Sai Wan Ho, Shau Kei Wan, Heng Fa Chuen and Chai Wan Stations). As a result, passengers from both sides would need to choose to interchange at the Quarry Bay Station, North Point Station or Central/Hong Kong Station. This would inevitably alter the travelling habits of the residents along the northshore of the Hong Kong Island and might cause some inconvenience.

4.20 Separately, the Tung Chung Line runs along the Tsing Ma Bridge. Due to the restrictions imposed by the bridge structure, the maximum train frequency of this line is much less than that of the existing Island Line. If the "Swap" Scheme is implemented, the Tung Chung Line would be merged with the eastern half of the Island Line, unavoidably affecting the maximum number of trains which Fortress Hill, North Point, Quarry Bay, Tai Koo, Sai Wan Ho, Shau Kei Wan, Heng Fa Chuen and Chai Wan Stations of the existing Island Line can operate (estimated reduction of 8 trains per hour). As such, passengers travelling to and from the Eastern District of the Hong Kong Island may suffer from a longer waiting time.

"Interchange" Scheme

4.21 The "Interchange" Scheme merely extends the underground section of the Tung Chung Line and Tseung Kwan O Line for interchange midway along the northshore of the Hong Kong Island. It does not affect the existing Island Line.

4.22 Under this conceptual scheme, the Tung Chung Line extends eastward from Hong Kong Station while the Tseung Kwan O Line extends westward from North Point Station. The extensions of both railway lines will form the alignment running through the vicinities of Tamar, HKCEC and Victoria Park. Based on preliminary evaluation, it may be easier to provide an interchange station at Tamar or Causeway Bay North for passengers to interchange between the Tung Chung Line and Tseung Kwan O Line along the northshore of the Hong Kong Island (see Fig. 4.7).

Fig. 4.7: Preliminary Conceptual Scheme of the "Interchange" Scheme of the North Island Line (Assuming Tamar as the interchange station)

4.23 The "Interchange" Scheme can better balance the travelling needs of different railway passengers. Not only could it provide greater convenience to residents along the Tung Chung Line and Tseung Kwan O Line by allowing them to travel to more districts along the northshore of the Hong Kong Island, this scheme could keep the Island Line intact and thus maintain the daily travelling habits of the passengers of the Island Line. Furthermore, the "Interchange" Scheme could be implemented in phases depending on the growth of actual passenger demand in different regions. Either the Tung Chung Line or Tseung Kwan O Line could be extended in advance to relieve the loading of the railway network in a timely manner.

4.24 As compared with the "Swap" Scheme, the "Interchange" Scheme would be less effective in terms of railway relief. If the "Interchange" Scheme is implemented, both the Tung Chung Line and Tseung Kwan O Line would gain direct access to a number of additional stations but remain unconnected to the existing Island Line. Some passengers would still need to interchange before reaching their destinations, resulting in a smaller redistribution of the traffic of the future railway network.

Other Railway Facilities

4.25 If the North Island Line is to be constructed, the consultant preliminarily assesses that it would be necessary to purchase additional trains to cater for the increased transport demand. The existing depots might be used for daily operation, and that no reclamation in Victoria Harbour would be involved.

Siu Sai Wan Line

4.26 The Siu Sai Wan Line is a railway project that connects to the Island Line. Since Siu Sai Wan is a well-developed community where space for railway construction and development is limited, the consultant has reviewed various schemes for the Siu Sai Wan Line (see Fig. 4.8), but considers that all these schemes would face considerable technical difficulties. Removal of certain buildings and facilities in the district may be required, causing considerable impacts on the local community.

Fig. 4.8: Preliminary Conceptual Scheme of the Siu Sai Wan Line

4.27 The first scheme is the "Extension" Scheme. From a railway operation perspective, a direct extension of the Island Line from Chai Wai Station to Siu Sai Wan may bring greater convenience to the residents. However, the existing Chai Wan Station has been built as an elevated structure and is surrounded by a large number of buildings which block the space for railway extension (see Fig. 4.9). As assessed by the consultant, unless certain buildings (including residential buildings, malls etc.) near the existing Chai Wan Station and along the alignment are demolished, no space is available for building the extension.

Fig. 4.9: Photograph of Chai Wan Station on the Island Line

4.28 The second scheme is the "Bifurcation" Scheme. Some locals suggested bifurcating the Island Line in the Eastern District to Siu Sai Wan, instead of extending the railway line from Chai Wan Station. Having considered the alignment of the existing Island Line, the consultant assesses that construction works of this spur line would probably involve reclamation, in particular filling up the Chai Wan Cargo Handling Basin outside Victoria Harbour. This may affect the related business activities of the Hong Kong Island. Furthermore, when the spur line is in operation, some trains might no longer stop at Chai Wan Station, resulting in a lower service frequency and longer waiting time for the passengers.

4.29 The third scheme is the "Feeder" Scheme, which refers to the construction of a dedicated medium capacity railway system for Siu Sai Wan to connect Heng Fa Chuen Station. While this scheme would not affect the train service of the existing Island Line, Siu Sai Wan residents using this new railway would need to interchange before reaching the various stations of the Island Line. This would be similar to using the existing road-based feeder services to access Heng Fa Chuen Station. Although construction works of this new railway line might not necessarily involve reclamation works to accommodate the Island Line, the consultant assesses that permanently resumption of some private land, as well as land for recreational and community facilities purposes, would most probably be required. As Heng Fa Chuen Station of the Island Line is a ground station, the new railway line would need to be built in the form of viaduct. Demolition and reconstruction of existing vehicular bridges might be required. The railway viaducts might also be very close to residential buildings, creating visual and noise impacts during construction and operation stages. In addition, significant temporary traffic measures would need to be implemented when the construction works of the railway take place.

4.30 At present, a large number of daytime and evening / special bus routes are available in Siu Sai Wan. Green mini-bus routes in Siu Sai Wan also provide feeder service to Chai Wan Station and Heng Fa Chuen Station of the Island Line, with overnight service to and from Mong Kok East Station of the East Rail Line. Using road-based transport modes, Siu Sai Wan residents may directly access to various major destinations, as well as different railway stations along the Island Line.

4.31 If the Siu Sai Wan Line is implemented, the consultant believes that more residents would travel by rail, thus increasing the loading of the Island Line. The section from Tin Hau Station to Causeway Bay Station would become the busiest section along the Island Line during morning peak hours. It is estimated that the one-direction traffic would increase from 64,000 to 67,000 passengers per hour during morning peak hours in 2031 when the Siu Sai Wan Line is in operation. The average train loading would rise from 75% to 79% (see Table 4.10), even higher than the busiest sections of the Island Line and Tseung Kwan O Line at present. This might affect the daily journeys of cross-harbour passengers of the Tseung Kwan O Line and residents of the Eastern District on the Hong Kong Island.

Table 4.10: Impacts generated on the Island Line by the Siu Sai Wan Line

Forecast usage of the section from Tin Hau Station to Causeway Bay Station of the Island Line during morning peak hours in 2031			
Scenario	**Designed maximum one-direction passenger capacity (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Siu Sai Wan Line	Approximately 85,000	Approximately 67,000	Approximately 79%
Without Siu Sai Wan Line		Approximately 64,000	Approximately 75%

4.32 As assessed by the consultant, it would be very difficult to implement the Siu Sai Wan Line. The project would most likely involve the removal of community facilities, and impact on planned government and private land, as well as the planning and redevelopment of the community. In view of the limitation of the railway network capacity, the needs of passengers of the Tseung Kwan O Line and eastern half of the Island Line would need to be addressed against the benefits for some Siu Sai Wan residents.

4.33 The consultant suggests keeping in view the actual patronage of the future railway system along the northshore of the Hong Kong Island, as well as the external traffic of Siu Sai Wan, in order to determine the way forward for the Siu Sai Wan Line. Only when the railway network has spare capacity, and the population change in Siu Sai Wan renders road-based transport unable to cope with the transport demand, the Siu Sai Wan Line could be deemed to provide greater transport benefits

Other Railway Facilities

4.34 If the Siu Sai Wan Line is still proceeded, the consultant considers that the Chai Wan Depot near Heng Fa Chuen Station of the Island Line should be used, whenever possible, to minimise land requirement for a depot.

Key Consultation Points

4.35 To better understand the public needs and considerations so as to help us further plan the railway system of the northshore of the Hong Kong Island, we would like to invite comments from the public on the following questions –

(a) If the North Island Line is to be implemented, would you prefer the "Swap" Scheme or "Interchange" Scheme? Do you have other suggestions?

(b) Given the inadequate space for railway development in Siu Sai Wan, would you accept demolishing existing buildings in the Eastern District or conducting reclamation to construct the Siu Sai Wan Line? Why?

(c) In general, under what circumstances would you support the implementation of the North Island Line and Siu Sai Wan Line along the northshore of the Hong Kong Island? Why?

5. South Island Line (West)

Background

5.1 A conceptual South Island Line was first set out in the RDS-1 in 1994. The original idea was to construct a medium capacity railway system[2] to connect Aberdeen, Ap Lei Chau, Telegraph Bay (i.e. the present Cyberport area) and Wong Chuk Hang with Admiralty. Connection to Pokfulam area was, however, not considered at that time (see Fig. 5.1).

Fig. 5.1: Conceptual Scheme of the South Island Line in the RDS-1 in 1994

5.2 At that time, the consultant considered that the South Island Line would help relieve the pressure on the road network. However, they assessed that the road system would have sufficient capacity to meet the anticipated demands and there was no imminent need to build the South Island Line. In 2000, the South Island Line was included in the RDS-2000 as a long-term possibility for further review subject to major changes in planning conditions.

[2] A medium capacity railway system generally refers to a passenger railway with a one-direction passenger capacity of approximately 20,000 to 40,000 passengers per hour. It is more suitable to operate in less populated areas to maintain higher train frequency and provide convenient railway service to passengers.

5.3 During the 2000s, the Aberdeen Tunnel has become increasingly congested with traffic queues extending from the tunnel to the road network in Wong Chuk Hang in peak hours. Not only does the congestion cause significant traffic delays to and from the Southern District, it also hinders the operation of other road-based transport modes. Moreover, development plans for Ocean Park were implemented to increase the number of attractions in order to attract more visitors. The Town Planning Board also approved a number of hotel proposals and lease modifications for some commercial development in Wong Chuk Hang, which are anticipated to further increase the transport demand in the Southern District.

5.4 Taking into account the fact that the external traffic in the vicinities of South Horizons, Lei Tung, Wong Chuk Hang and Ocean Park in the Southern District hinges on the Aberdeen Tunnel, the Government decided to advance the development of the South Island Line (East). Whilst the project has commenced construction in 2011 and is expected to be completed in 2015, some locals look forward to the early planning of the South Island Line (West) such that railway service can be extended to cover a larger residential and employment population in the Southern District.

Functions and Planning Considerations

5.5 So far as the conceptual scheme of the South Island Line (West) is concerned, the consultant has considered and assessed the latest planning of the Southern District, and contends that the South Island Line (West) may achieve two functions –

(a) Addresses the growing transport demand in the western part of the Southern District; and
(b) Serves as a possible relief to the potential pressure on the road network.

Addresses the growing transport demand in the western part of the Southern District

5.6 The residential and commercial nodes in the Southern District mainly stretch along two clusters with one on the west, namely Pokfulam, Cyberport, Wah Fu and Aberdeen, and another lying to the east, namely South Horizons, Lei Tung Estate, Wong Chuk Hang and Ocean Park. The latter will be provided with railway service by the South Island Line (East).

5.7 Based on the population forecast, stations along the South Island Line (East) is expected to serve both the residential and working population of approximately 350,000 in the Southern District by 2016. The Ocean Park, a popular tourist destination, attracts more than 7 million visitors a year and will generate additional transport demands. In the long term, along with the natural growth of population in the Southern District, the residential population in the western part is estimated to grow to nearly 100,000 in 2031 with transport demand possibly equivalent to that of the eastern part. The key growth areas are situated near Wah Fu and Aberdeen. If any new development projects are implemented, there would be a greater increase in transport demand (see Fig 5.2).

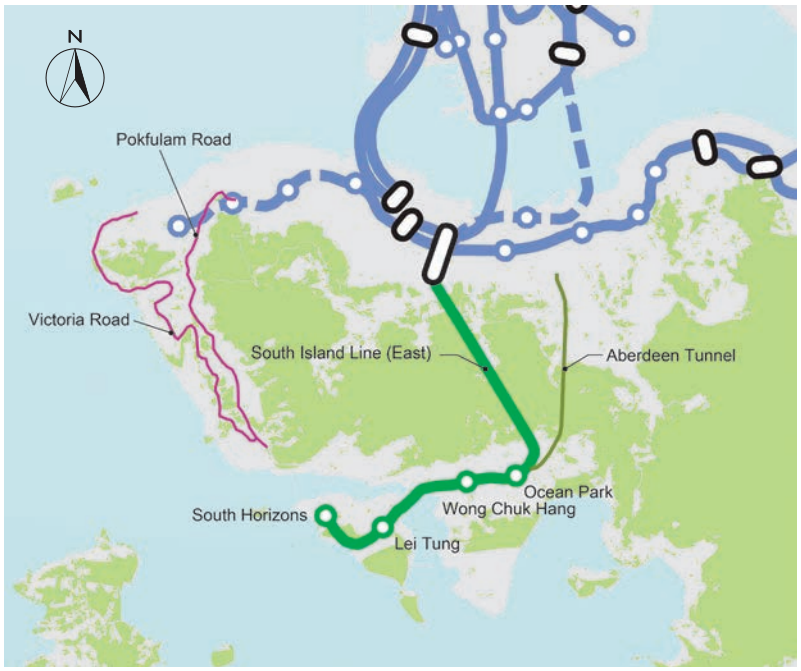
Fig. 5.2: Development of the Western Part of the Southern District

5.8 Continuous social development is accompanied by growing public demand for housing. In view of the fact that some land in the western part of the Southern District is yet to be developed, the potential land development opportunities may further increase the number of transport trips. Depending on the development paces of the western part of the Southern District, the consultant considers that it may be necessary in future to construct the South Island Line (West) to provide another mode of transport to the local residents and address the possible increase in transport demand.

Serves as a possible relief to the potential pressure on the road network

5.9 The external traffic of the western part of the Southern District mainly relies on road-based transport modes. Both Pokfulam Road and Victoria Road are key roads connecting the district to the Central and Western District. At present, a number of bus and minibus routes operate along these two roads to serve local residents travelling between Wah Fu/Aberdeen and the Central and Western District. On the other hand, areas near Cyberport and Pokfulam adopt lower development density, and many residents therein travel to the Central and Western District by private cars via Pokfulam Road or Victoria Road (see Fig. 5.3).

Fig. 5.3: External Traffic of the Southern District



5.10 The hilly terrain and steep slopes in the western part of the Southern District make conditions difficult to conduct further large-scale widening works on Pokfulam Road and Victoria Road. In the 2000s, different road improvement works were successively implemented by the Government, including the completion of the Interchange at Pokfulam Road and Sassoon Road Junction, as well as the Victoria Road Improvements. The room for increasing the traffic capacity of both roads in future is anticipated to be very limited. If the local road network could no longer carry the loading, it would not only impact on the daily travels of residents in the western part of the Southern District, but could also affect access to the Queen Mary Hospital. This would be rather undesirable.

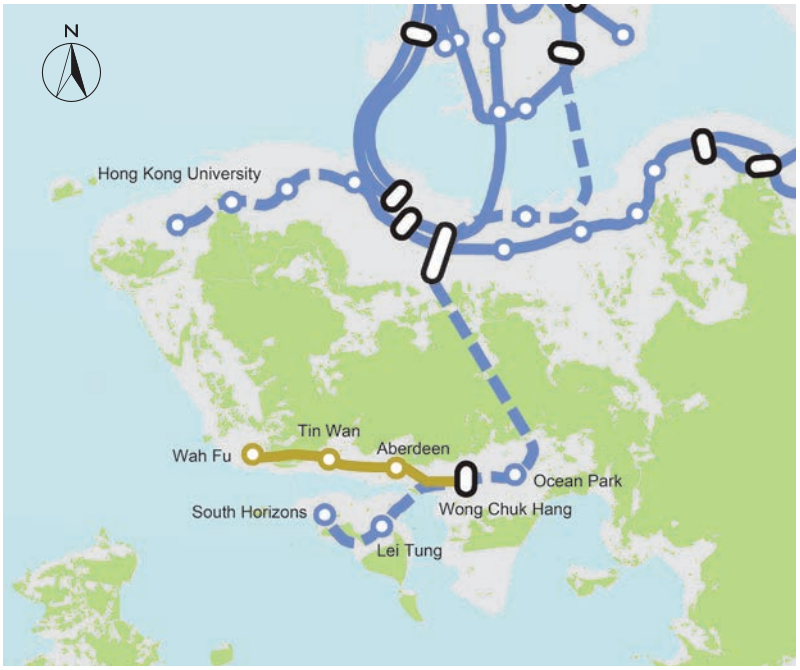
5.11 At present, Pokfulam Road (Southern District Section) and Victoria Road are not as seriously congested as the Aberdeen Tunnel. The need for constructing the South Island Line (West) may not be as imminent as that of the South Island Line (East). However, as the population grows in the western part of the Southern District, we need to consider providing some residents with an alternative transport mode to travel to and from the urban area, so as to relieve the potential pressure on the key roads in the western part of the Southern District.

5.12 With the completion of the South Island Line (East) in 2015, the consultant thinks that the Government could consider developing a mass transit system in other relatively populated nodes of the Southern District. This system should connect with the South Island Line (East) to encourage passengers to travel to and from the urban area by railway, thus reducing their reliance on road-based transport.

Preliminary Conceptual Scheme of the Railway Proposal

5.13 The consultant considers that the South Island Line (West) may be analysed in two sections. The first section may be named as the Aberdeen Section, which starts at Wong Chuk Hang and extends westward to Aberdeen and Wah Fu. The line may also serve Tin Wan along the alignment (see Fig. 5.4).

Fig. 5.4: Preliminary Conceptual Scheme of the Aberdeen Section of the South Island Line (West)



5.14 As Wong Chuk Hang Station of the South Island Line (East), currently under construction, is designed as an elevated station, passengers of the Aberdeen Section might prefer a convenient interchange arrangement to reach Admiralty. As such, the consultant preliminarily suggests that the railway near Wong Chuk Hang Station should be built in viaduct, whereas the remaining parts from Aberdeen Station to Wah Fu Station could be designed to run mainly underground to reduce impacts on the local community. The consultant estimates that the journey time from Aberdeen to Wong Chuk Hang would be about 4 minutes. Upon interchanging with the South Island Line (East), it would roughly take an additional 6 minutes to travel from Wong Chuk Hang to Admiralty.

5.15 Accordingly to the consultant's analyses, Wah Fu and Aberdeen have a higher population density and are expected to experience higher growth in transport demand in future. Through the Aberdeen Section, a shorter alignment, it is believed that the scheme would be able to meet the travelling needs of most residents in the western part of the Southern District. It would also enable some Wah Fu and Aberdeen residents to travel to and from the northshore of the Hong Kong Island without using Pokfulam Road and Victoria Road.

5.16 The second section may be named as the Pokfulam Section, which starts at Hong Kong University in Pokfulam and extends southward to Cyberport and Wah Fu. It may also serve the vicinities of the Queen Mary Hospital (see Fig. 5.5). However, space for railway development in Pokfulam is limited due to the hilly terrain and steep slopes in the region. If Queen Mary Hospital Station is added, the alignment near Cyberport would run through a valley area. Building this part in tunnel would be extremely difficult, and the railway viaduct might cause visual impact along the alignment.

Fig. 5.5: Preliminary Conceptual Scheme of the Pokfulam Section of the South Island Line (West)

5.17 Based on the existing travelling habits of residents living near Cyberport and Pokfulam, who travel by private cars more often, the consultant believes that some residents would continue to travel by private cars even if railway service is provided in the district. However, the consultant is equally concerned about the potential loading of the South Island Line (East), which might be increased when passengers of the Aberdeen Section interchange merely at Wong Chuk Hang Station to travel to and from the northshore of the Hong Kong Island.

5.18 The South Island Line (East) is a medium capacity railway system which operates trains with fewer cars. The consultant forecasts that, even without the Aberdeen Section, the average train loading of the section from Wong Chuk Hang Station to Ocean Park Station might reach 60% or above during morning peak hours in 2031. Further monitoring would be necessary to assess whether the South Island Line (East) could accommodate the additional traffic brought by the Aberdeen Section. On the other hand, local residents might wish to travel by alternative transport modes to and from other areas if the traffic of Pokfulam Road and Victoria Road was no longer smooth due to increase in traffic flow.

5.19 In this connection, the consultant suggests making provision for the extension of the South Island Line (West) to Pokfulam. Considerations should be given to connect the Pokfulam Section with Hong Kong University Station on the West Island Line in order to provide another interchange station and divert railway traffic. The consultant considers that this railway extension to Pokfulam might be constructed in view of the actual usage of the South Island Line (East), Pokfulam Road and Victoria Road in future.

Other Railway Facilities

5.20 The consultant assesses that the Wong Chuk Hang Depot of the South Island Line (East) could be used to meet the maintenance needs of the South Island Line (West). That said, trains would need to be stabled in other locations. A preliminary idea is to consider developing underground caverns or siding tunnels in the region to reduce land requirement.

Key Consultation Points

5.21 To better understand the public needs and considerations so as to help us further plan the South Island Line (West), we would like to invite comments from the public on the following questions –

(a) Do you agree that the Aberdeen Section and Pokfulam Section of the South Island Line (West) may be developed in two phases and that railway service should first be developed from Aberdeen to Wah Fu whereas provision be made for the future extension to Pokfulam? Why?

(b) Should the Pokfulam Section of the South Island Line (West) be implemented, the addition of Queen Mary Hospital Station would have bearing on the alignment design. As a result, the section near Cyberport could hardly be constructed in tunnel, and might create visual impact along the alignment. Do you think it is worthwhile to include a Queen Mary Hospital Station? Why?

(c) In general, under what circumstances would you support the implementation of the South Island Line (West)? Why?

6. Tuen Mun South Extension and Hung Shui Kiu Station

Background

6.1 In 1993, the Government conducted a public consultation for the First Railway Development Study and proposed the construction of the Western Corridor (see Fig. 6.1). The original scheme ran from Nam Cheong to Tin Shui Wai only. Having considered the public aspirations for the early provision of passenger railway service from Tuen Mun to the urban area, the Government further reviewed the related conceptual scheme.

Fig. 6.1: Conceptual Scheme of the Western Corridor in the Consultation Document for the First Railway Development Study

6.2 The supplementary study concluded that extending the Western Corridor from Nam Cheong to Tuen Mun North was technically feasible and cost-effective. In 1994, the Government published the RDS-1 and incorporated the recommendations made in the supplementary study, remarking that the Western Corridor might even extend to central Tuen Mun in future.

6.3 The concept of the Western Corridor was later developed as the West Rail Line, which includes Siu Hong Station at Tuen Mun North and Tuen Mun Station at central Tuen Mun in its final scheme. After extensive consultation, construction works of the West Rail Line commenced in October 1998. The railway was eventually commissioned in December 2003, providing railway service between Tuen Mun and Nam Cheong via Hung Shui Kiu (located between Tin Shui Wai Station and Siu Hong Station). Furthermore, the Kowloon Southern Link, proposed as a prioritised project in the RDS-2000, began operation in 2009, further extending the West Rail Line from Nam Cheong to Austin, East Tsim Sha Tsui and Hung Hom Stations. This serves to provide passengers from northwestern New Territories with direct access to more regions. (see Fig. 6.2)

Fig 6.2: West Rail Line and HSK NDA

6.4 Although two stations (i.e. Tuen Mun Station and Siu Hong Station) are established along the West Rail Line to serve the Tuen Mun New Town, some locals would like to further extend the West Rail Line to Tuen Mun South (in particular near Tuen Mun Ferry Pier) such that more Tuen Mun residents can use railway service more conveniently. Separately, the Planning Department (PlanD) and Civil Engineering and Development Department (CEDD) commenced the "Hung Shui Kiu New Development Area Planning and Engineering Study" in 2011 to reinvigorate the planning of the HSK NDA along the West Rail Line. As such, the consultant considers the related ideas and explores whether it would be feasible to implement the Tuen Mun South Extension and Hung Shiu Kiu Station as enhancements for the existing railway line.

Functions and Planning Considerations

6.5 Tuen Mun is the most populated new town in the northwestern New Territories with an estimated population of about 490,000. The area near Tuen Mun Ferry Pier is one of the major residential areas in the region, which is currently the home of approximately 90,000 residents.

6.6 At present, Tuen Mun South residents intending to use the West Rail Line usually travel to Tuen Mun Station by Light Rail or MTRCL feeder bus. On the other hand, a large number of bus routes directly connect Tuen Mun to different MTRCL stations in the urban area (e.g. Tsuen Wan, Tai Wo Hau, Mei Foo, Lai Chi Kok, Cheung Sha Wan, Sham Shui Po, Kwai Hing, Kwai Fong, Prince Edward, Mong Kok East, Wong Tai Sin, Kowloon Bay, Ngau Tau Kok, Kwun Tong and Lam Tin Stations etc.) and various regions on the Hong Kong Island (e.g. Sheung Wan, Central, Admiralty, Wan Chai and Causeway Bay etc.) via the Western Harbour Tunnel. Some Tuen Mun South residents may find the point-to-point service provided by existing road-based transport more direct and convenient, and are less willing to travel to and from the urban area at Tuen Mun Station of the West Rail Line. That said, should the Tuen Mun South Extension be constructed, more local residents might be willing to use the West Rail Line to satisfy their daily travelling needs.

6.7 A patronage survey in 2011 revealed that the patronage of the West Rail Line averaged at approximately 360,000 trips per day, which was lower than other heavy railway systems[3] like the East Rail Line (approximately 980,000 per day), Tsuen Wan Line (approximately 950,000 per day), Island Line (approximately 830,000 per day) and Kwun Tong Line (approximately 520,000 per day). During morning peak hours, the section from Kam Sheung Road Station to Tsuen Wan West Station was the busiest section of the West Rail Line, with an average train loading of approximately 65%; during evening peak hours, the section from Tsuen Wan West Station to Kam Sheung Road Station was the busiest with an average train loading of 58% (see Table 6.3).

Table 6.3: Busiest Sections of the West Rail Line in 2011

Railway section	Train frequency (per hour)	Average train loading
Morning peak hours		
Kam Sheung Road Station to Tsuen Wan West Station	20	Approximately 65%
Evening peak hours		
Tsuen Wan West Station to Kam Sheung Road Station	15	Approximately 58%

6.8 Based on these data, the West Rail Line has sufficient capacity to address the travelling needs of more passengers under the existing train operating schedule. As a matter of fact, the West Rail Line has room to increase service frequency and further improve its traffic capacity in view of actual demand.

6.9 On the other hand, the ongoing "Hung Shui Kiu New Development Area Planning and Engineering Study" is reviewing the previous recommendations made on the HSK NDA. In particular, the study covers an area of approximately 790 hectares and is considering the possibility of integrating the HSK NDA with the neighbouring Tuen Mun and Tin Shui Wai New Town to achieve higher community and infrastructure planning efficiencies.

[3] A heavy railway system refers to a freight railway or a passenger railway with a one-direction passenger capacity of more than 40,000 passengers per hour.

6.10 Based on previous estimation, the proposed HSK NDA site was home to approximately 25,000 residents when the "Hung Shui Kiu New Development Area Planning and Engineering Study" commenced in 2011. Its existing land uses have a mixed urban-rural character predominated by village, low density private residential, agricultural and open storage/port back-up uses. At present, the existing Hung Shui Kiu Station of the Light Rail provides service to and from northwestern New Territories and feeder to the West Rail Line. Coupled with different road-based transport modes, it is sufficient to address the existing local transport demand.

6.11 If the HSK NDA is implemented, it is estimated that the local population would gradually increase to approximately 160,000 by the 2030s, with the employment opportunities increased to around 48,000. It might be necessary to add a Hung Shui Kiu Station along the West Rail Line to directly serve the residential and employment population in the area. However, the consultant of the "Hung Shui Kiu New Development Area Planning and Engineering Study" is currently working on a Preliminary Outline Development Plan and conducting relevant technical evaluation based on the comments received from its Stage 1 community engagement exercise. The above projections may be subject to further amendments.

6.12 It is worth noting that construction works of the Tai Wai to Hung Hom Section of the Shatin to Central Link has already commenced for expected completion in 2018. By then, the West Rail Line, Tai Wai to Hung Hom Section of the Shatin to Central Link and Ma On Shan Line will be combined into the East West Corridor (see Fig. 6.4). Passengers will be able to travel from northwestern New Territories to East Tsim Sha Tsui, Hung Hom, Kowloon East, Tai Wai, Ma On Shan and Wu Kai Sha without interchange. As the East West Corridor will connect to more districts and may render the existing West Rail Line more attractive, the consultant considers that the impact on the loading of the East West Corridor induced by the Tuen Mun South Extension and Hung Shui Kiu Station should be assessed.

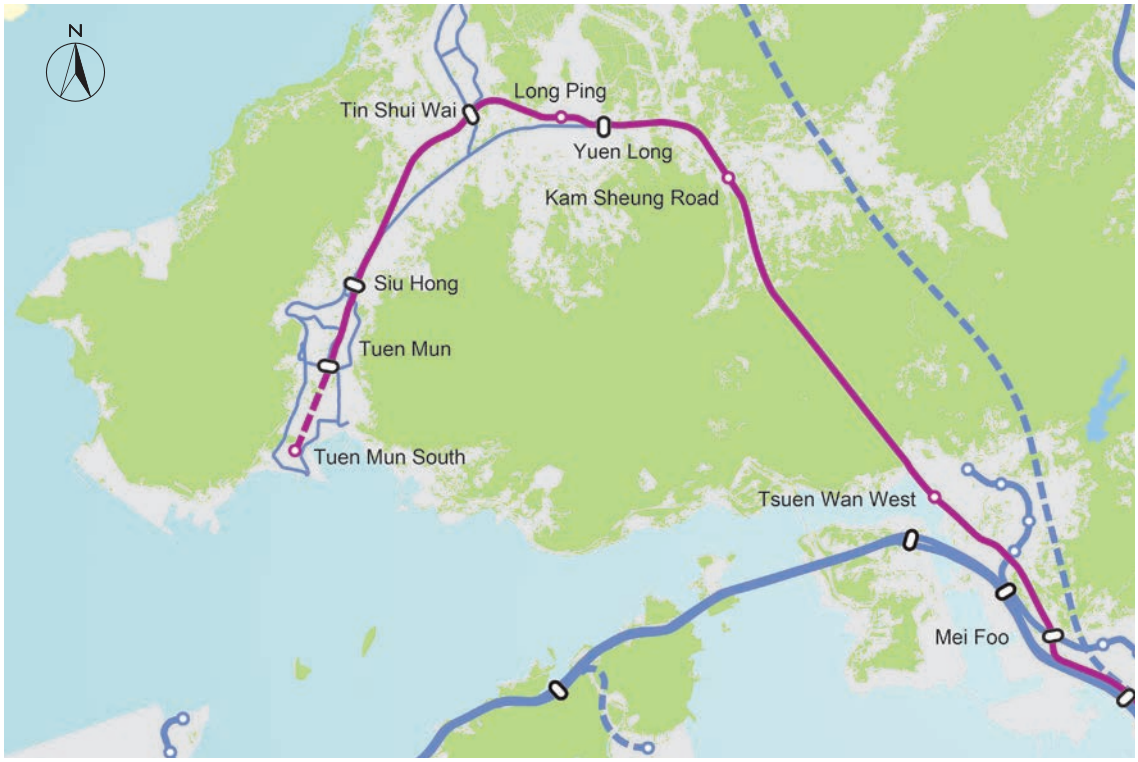
Fig. 6.4: Future East West Corridor

Preliminary Conceptual Schemes of the Railway Proposals

Tuen Mun South Extension

6.13 The Tuen Mun South Extension considered by the consultant extends the West Rail Line southward from Tuen Mun Station to the vicinities of Tuen Mun Ferry Pier. The journey time from Tuen Mun South to Tuen Mun is estimated to be approximately 4 minutes (see Fig. 6.5).

Fig. 6.5: Preliminary Conceptual Scheme of the Tuen Mun South Extension



6.14 The existing Tuen Mun Station of the West Rail Line is built over Tuen Mun River, and its end is not surrounded by building structures. According to the consultant's assessments, it is technically feasible to extend the railway line from Tuen Mun Station to Tuen Mun South Station along Tuen Mun River. However, given that Tuen Mun Station is an elevated station and is geographically close to Tuen Mun South, extending the elevated railway across Tuen Mun River to continue underground would result in a gradient too steep for trains to run through. As such, it is proposed that the Tuen Mun South Extension should be planned to run on viaduct.

6.15 As the Tuen Mun South Extension will attract some Tuen Mun South residents to use railway service, the consultant has considered whether the extension would increase the loading of the East West Corridor. Based on a preliminary analysis, the consultant forecasts that the section from Tsuen Wan West Station to Mei Foo Station will be the busiest section upon the commissioning of the East West Corridor. If the Tuen Mun South Extension is constructed, the one-direction traffic along the section is estimated to increase from approximately 50,000 to 54,000 passengers per hour during morning peak hours in 2031 (see Table 6.6).

Table 6.6: Impacts generated on the East West Corridor by the Tuen Mun South Extension

Forecast usage of the section from Tsuen Wan West Station to Mei Foo Station of the East West Corridor during morning peak hours in 2031				
Scenario	**Assumed train frequency (per hour)**	**One-direction passenger capacity estimated by the consultant (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Tuen Mun South Extension	28	Approximately 75,000	Approximately 54,000	Approximately 72%
Without Tuen Mun South Extension			Approximately 50,000	Approximately 67%

6.16 As assessed by the consultant, the average train loading of the section of Tsuen Wan West Station to Mei Foo Station would reach approximately 72%, similar to the busiest sections of the present Tseung Kwan O Line or Island Line during morning peak hours.

6.17 Should the Tuen Mun South Extension be implemented, the consultant estimates that the three railway stations in the Tuen Mun New Town (i.e. Tuen Mun South, Tuen Mun and Siu Hong Stations) will attract considerable patronage. In the long run, trains along the East West Corridor might be packed with passengers upon leaving Tin Shui Wai Station, in particular during peak hours. Passengers might experience difficulty in boarding at Long Ping, Yuen Long, Kam Sheung Road and Tsuen Wan West Stations. As a result, residents living in these districts may face longer waiting time before getting on the trains along the East West Corridor.

6.18 Upon the commissioning of the Kowloon Southern Link in 2009, the West Rail Line was extended from Nam Cheong Station to Austin, East Tsim Sha Tsui and Hung Hom Stations. The patronage of the West Rail Line immediately rose by 34% in the year. As the East West Corridor will provide passengers along the West Rail Line with direct access to 15 additional stations[4], there are still many uncertainties on the usage of the East West Corridor. The consultant suggests closely monitoring the actual usage of the East West Corridor upon its commissioning in 2018, so as to more accurately evaluate the impacts on the East West Corridor induced by the Tuen Mun South Extension.

[4] The 15 stations are Ho Man Tin, Ma Tau Wai, To Kwa Wan, Kai Tak, Diamond Hill, Hin Keng, Tai Wai, Che Kung Temple, Sha Tin Wai, City One, Shek Mun, Tai Shui Hang, Heng On, Ma On Shan and Wu Kai Sha.

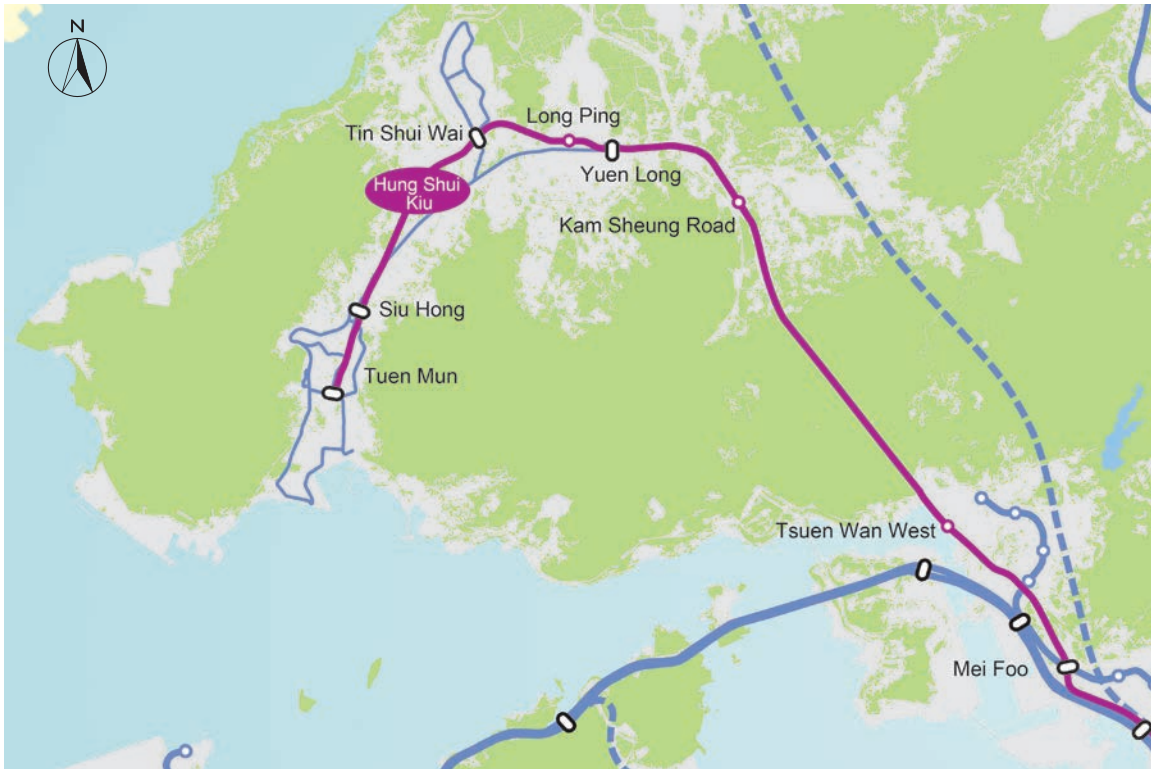
Other Railway Facilities

6.19 If the Tuen Mun South Extension is implemented, the consultant assesses that the purchase of more trains would be necessary to handle additional passengers, whereas the existing depot of the East West Corridor could be used for daily operation purpose.

Hung Shui Kiu Station

6.20 The proposed Hung Shui Kiu Station is to be located between Tin Shui Wai Station and Siu Hong Station on the West Rail Line (see Fig. 6.7). Upon analysis, the consultant considers that it is technically feasible to add a railway station along the elevated railway section.

Fig. 6.7 :Preliminary Conceptual Scheme of the Hung Shui Kiu Station



6.21 If the Tai Wai to Hung Hom Section of the Shatin to Central Link is completed in 2018 as scheduled, the West Rail Line, Tai Wai to Hung Hom Section of the Shatin to Central Link and Ma On Shan Line will combine into the East West Corridor. Should the Hung Shui Kiu Station be implemented, it would become a part of the East West Corridor. The original journey time from Tuen Mun Station to Wu Kai Sha Station along the East West Corridor is around 70 minutes; if the Hung Shui Kiu Station is added, trains would need to stop at one more intermediate station and the journey time would become slightly longer.

6.22 The consultant is wary of the impacts of the Hung Shui Kiu Station generated on the East West Corridor. According to the preliminary analysis, the section between Tsuen Wan West Station to Mei Foo Station will be the busiest along the East West Corridor. If the Hung Shui Kiu Station is constructed, the one-direction traffic of this section is estimated to decrease slightly from 50,000 to 49,000 passengers per hour during morning peak hours in 2031 (see Table 6.8).

Table 6.8: Impacts generated on the East West Corridor by the Hung Shui Kiu Station

Forecast usage of the section from Tsuen Wan West Station to Mei Foo Station of the East West Corridor during morning peak hours in 2031				
Scenario	**Assumed train frequency (per hour)**	**One-direction passenger capacity estimated by the consultant (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Hung Shui Kiu Station	28	Approximately 75,000	Approximately 49,000	Approximately 65%
Without Hung Shui Kiu Station			Approximately 50,000	Approximately 67%

6.23 Although the Hung Shui Kiu Station will attract Hung Shiu Kiu residents to use the railway, the consultant considers that some passengers in northwestern New Territories might be concerned about the lengthened railway journey time, and opt for road-based transport to travel to and from the urban area instead. This would offset the additional traffic generated by the Hung Shui Kiu Station on the East West Corridor. As the actual effect would probably hinge on the provision of road-based transport modes and railway in the area, as well as population distribution and growth in Hung Shui Kiu, the consultant suggests reviewing the conceptual scheme of the Hung Shui Kiu Station in future to further verify its actual benefits.

Other Railway Facilities

6.24 The consultant preliminary assesses that the addition of the Hung Shui Kiu Station would have merely minor impacts on railway operation. The existing railway depot should be sufficient to cater for its daily operation needs.

Key Consultation Points

6.25 To better understand the public needs and considerations, so as to help us further plan the Tuen Mun South Extension and Hung Shui Kiu Station, we would like to invite comments from the public on the following questions –

(a) To provide effective railway service in Tuen Mun South, do you consider that the area near Tuen Mun Ferry Pier is the suitable location for constructing a railway extension? Why?

(b) Do you agree that the Government should plan the Hung Shui Kiu Station in tandem with the HSK NDA to satisfy the local transport demand?

(c) Upon completion of the Tai Wai to Hung Hom Section of the Shatin to Central Link, the West Rail Line will become a part of the East West Corridor which runs through northwestern New Territories, East Tsim Sha Tsui, Hung Hom, Kowloon East, Tai Wai, Ma On Shan and Wu Kai Sha. To avoid congestion from arising along the East West Corridor, do you agree that the way forward for the Tuen Mun South Extension and Hung Shui Kiu Station should be decided after the actual usage of the East West Corridor becomes observable? Why?

(d) In general, under what circumstances would you support the implementation of the Tuen Mun South Extension and Hung Shui Kiu Station? Why?

7. Tung Chung West Extension

Background

7.1 In October 1989, the Hong Kong Government announced its plan to construct a new airport at Chek Lap Kok in order to address the growing demand of air transportation. The Tung Chung New Town and Airport Railway (i.e. the Airport Express and Tung Chung Line) were included in the Airport Core Programme to support the development of the new airport.

7.2 Most of the Tung Chung New Town was developed on reclaimed land, with the first public housing estates being completed and occupied in 1997. According to the original plan, the subsequent development of the Tung Chung New Town would be expanded to more land (including Tai Ho area), which was expected to accommodate a population of approximately 320,000 by 2011. In order to support the relevant proposals, the Tung Chung Line was commissioned in June 1998 with its terminus Tung Chung Station located in the centre of the Tung Chung New Town. It provides Tung Chung residents with mass transit service to and from Tsing Yi, Kowloon and Hong Kong Island.

7.3 As a part of the long-term planning of the Tung Chung New Town (including a preliminary proposal on further reclamation for the purpose of new town expansion), the Government reserved a site for constructing a railway station in the possible reclamation area in Tung Chung West: should the new town expand westward in future, railway service could be provided in the area as necessary.

7.4 The population growth in Hong Kong slowed down subsequently. The Government set up the "Lantau Development Task Force" in 2004 and published the "Revised Concept Plan for Lantau" in 2007 which set out a series of revised recommendations for the development of Lantau Island. These include the further development of Tung Chung into a fully planned new town with a design population of around 220,000.

7.5 In order to implement the relevant plan, the Government launched the "Tung Chung New Town Extension Study" in 2012 to identify the development potential and opportunities of Tung Chung and its vicinities with a view to exploring the scale for Tung Chung extension. Some locals believe that the Tung Chung Line should be extended to Tung Chung West as early as possible to enable residents to use the Tung Chung Line more conveniently. As such, the consultant assesses the conceptual Tung Chung West Extension in the light of the latest developments.

Functions and Planning Considerations

7.6 The current residential population of the Tung Chung New Town is approximately 80,000, which is largely different from the previous projection of 320,000 by 2011. At present, development in Tung Chung West is limited to the vicinities of Yat Tung Estate, with the remaining parts being rural villages, fallow land and open countryside subject to detailed planning.

7.7 Due to the difference between the actual and anticipated development of the Tung Chung New Town, the implementation progress of infrastructure should be phased accordingly. In order to meet the transport needs of Tung Chung West residents, a large number of bus routes are currently available in the district, including feeder routes to Tung Chung Station, as well as those travelling to and from Tsuen Wan, Ho Man Tin, Tsim Sha Tsui, Hung Hom, Tin Hau, Tseung Kwan O, Tin Shui Wai and Shatin etc., to satisfy diversified travelling needs.

7.8 The consultant considers that the existing Tung Chung Line is capable of carrying more passengers. In 2011, the daily patronage of the Tung Chung Line averaged at approximately 200,000 passengers. Despite the lower service frequency of the Tung Chung Line, with a headway of 4 minutes in peak hours, it appears that the railway managed to satisfy the passenger demand. During morning peak hours, the section from Kowloon Station to Hong Kong Station was the busiest along the Tung Chung Line, with an average train loading of approximately 61%. On the other hand, the section from Hong Kong Station to Kowloon Station was the busiest during evening peak hours, with an average train loading of approximately 42% (see Table 7.1).

Table 7.1: Busiest Sections of the Tung Chung Line in 2011

Railway section	Train frequency (per hour)	Average train loading
Morning peak hours		
Kowloon Station to Hong Kong Station	15	Approximately 61%
Evening peak hours		
Hong Kong Station to Kowloon Station	15	Approximately 42%

7.9 In assessing the Tung Chung West Extension, the consultant is largely concerned about whether sufficient transport demand exists in Tung Chung West to justify the development of a mass transit system through extending the Tung Chung Line. At present, Tung Chung West is the home to approximately 40,000 residents. If the development density of the land in Tung Chung West, other than Yat Tung Estate, remains low, the population growth of the district will not change prominently.

7.10 Nevertheless, the Housing Department is planning to construct more public housing estates in Tung Chung West, whilst PlanD and CEDD are conducting the "Tung Chung New Town Extension Study" which incorporates Tung Chung West into its Potential Town Extension Zone. Their consultants will develop a Recommended Outline Development Plan for the further development of the Tung Chung New Town based on public aspirations and environmental constraints.

7.11 Depending on whether these plans will be implemented, new opportunities of land development may arise in Tung Chung West, leading to an increase in the transport demand. In this connection, the consultant contends that it is worthwhile to review the possibility of providing railway service to this area.

Preliminary Conceptual Scheme of the Railway Proposal

7.12 Under the conceptual Tung Chung West Extension formulated by the consultant, the Tung Chung Line extends westward from Tung Chung Station to serve the existing and potential development in the region. The estimated journey time from Tung Chung West to Tung Chung is about 4 minutes (see Fig. 7.2).

Fig. 7.2: Preliminary Conceptual Scheme of the Tung Chung West Extension

7.13 Given that the existing Tung Chung Station is an underground station, the consultant advises that the Tung Chung West Extension could be constructed in tunnels. The planning of the actual alignment needs to be coordinated with the land planning of Tung Chung West and actual development of the community.

7.14 Assuming that the Tung Chung West Extension is in place in view of the population growth brought by new town extension, the consultant preliminarily estimates that the section from Kowloon Station to Hong Kong Station would remain as the busiest section of the Tung Chung Line during morning peak hours in 2031, with the one-direction traffic slightly rising from 29,000 to 30,000 passengers per hour (see Table 7.3).

Table 7.3: Impacts generated on the Tung Chung Line by the Tung Chung West Extension

Forecast usage of the section from Kowloon Station to Hong Kong Station of the Tung Chung Line during morning peak hours in 2031				
Scenario	**Assumed train frequency (per hour)**	**Designed one-direction passenger capacity (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Tung Chung West Extension	26	Approximately 66,000	Approximately 30,000	Approximately 45%
Without Tung Chung West Extension			Approximately 29,000	Approximately 44%

7.15 As the relevant development plan of Tung Chung West is under detailed study, and the potential implementation of the North Island Line may change the actual usage of the Tung Chung Line, the consultant believes that the Tung Chung West Extension should be further reviewed in the light of the population growth in Tung Chung West and actual traffic of the Tung Chung Line in future.

Other Railway Facilities

7.16 If the Tung Chung West Extension is implemented, the consultant estimates that new trains would need to be purchased. The existing depot of the Tung Chung Line could be used for the maintenance and stabling of these additional trains.

7.17 Separately, PlanD and CEDD are considering reclamation in Tung Chung East as a way to expand the new town under the ongoing "Tung Chung New Town Extension Study", alongside with the possibility of adding a Tung Chung East Station in the reclamation site. The consultant believes that the relevant proposal may involve modifications to the existing alignment of the Tung Chung Line. A detailed investigation should be conducted with MTRCL to establish the feasibility of this scheme in future to avoid affecting the daily operation of the Tung Chung Line.

Key Consultation Points

7.18 To better understand the public needs and considerations so as to help us further plan the Tung Chung West Extension, we would like to invite comments from the public on the following questions –

(a) Apart from the vicinities of Yat Tung Estate, low-density development sprawls across most parts of Tung Chung West. Do you think that the Tung Chung West Extension should tie in with the new town extension plan to improve the cost-effectiveness of the railway project? Why?

(b) A large number of bus routes are available in Tung Chung West, which provide feeder service to Tung Chung Station of the Tung Chung Line, and travel to and from Tsuen Wan, Ho Man Tin, Tsim Sha Tsui, Hung Hom, Tin Hau, Tseung Kwan O, Tin Shui Wai and Shatin etc. Do you think there is an imminent need to construct the Tung Chung West Extension if Tung Chung West is not further developed? Why?

(c) In general, under what circumstances would you support the implementation of the Tung Chung West Extension? Why?

8. Kwu Tung Station

Background

8.1 In early 1998, consultants commissioned by the Government launched the "Planning and Development Study on North East New Territories" to identify sites of new development areas, with a view to accommodating the rapid population growth in Hong Kong. As it was considered, amongst other development factors, that Kwu Tung North is adjacent to the Lok Ma Chau Spur Line which was under planning at that time and thus can be easily connected to the railway network, the site was selected as a prioritised new development area.

8.2 Later in 1999, the Government decided to implement the Lok Ma Chau Spur Line which runs through Kwu Tung. Construction works of the Lok Ma Chau Spur Line commenced in late 2002 and were completed in 2007.

8.3 Due to slowdown of the population growth and housing demand, the Government temporarily shelved the proposal of the Kwu Tung North New Development Area (KTN NDA) in 2003. In 2007, the "Hong Kong 2030: Planning Vision and Strategy" reviewed the need for new development areas in the New Territories, and recommended proceeding with the KTN NDA proposal to address long-term housing demand and provide more employment opportunities.

8.4 In order to reinitiate the planning of the new development area, PlanD and CEDD conducted the "North East New Territories New Development Areas Planning and Engineering Study" in 2008 to review the relevant recommendations on land development. It is necessary for us to reconsider the idea of adding the Kwu Tung Station in the light of the latest planning status of the new development area.

Functions and Planning Considerations

8.5 It has been the long-standing government policy, as well as the aspiration of the general public, to better integrate transport and urban planning. In the Stage 1 public engagement exercise, many commentators suggested that future railway projects should be closely coordinated with regional development plans in order to effectively serve residents' transport needs whilst increasing the potential for land development.

8.6 When planning for the aforesaid KTN NDA, we aim to take advantage of the railway network to increase the accessibility of Kwu Tung North, and locate more intensive development near the railway stations to provide greater convenience to most residents in using railway service.

8.7 The previous "Planning and Development Study on North East New Territories" was completed in 2003. Based on a development theme of "boundary town"[5], the consultant at that time suggested developing Kwu Tung North into a new town with a population of 100,000 with approximately 16,000 employment opportunities.

8.8 In view of the public aspirations and development needs, the ongoing "North East New Territories New Development Areas Planning and Engineering Study" has reviewed the development blueprint of the KTN NDA. In the early stage of the study, the proposed site of the KTN NDA covers an area of approximately 450 hectares which had a population of only about 4,500 residents. The majority of the area in Kwu Tung North involved mixed land uses, such as small-scale residential developments, village settlements, agricultural lands, open storages etc. The existing road-based transport modes are sufficient to support the current transport demand in the region.

8.9 According to the Recommended Outline Development Plan published in 2012, the KTN NDA was preliminarily assumed to accommodate a population of approximately 81,900 and provide about 35,400 employment opportunities to increase housing supply and facilitate more effective use of infrastructures. However, the consultant of that study is currently reviewing the comments received from the Stage 3 public engagement to refine the proposal. As such, the above projections may be subject to further adjustments. If the KTN NDA is implemented, it might be necessary to add a Kwu Tung Station on the Lok Ma Chau Spur Line for the residential and employment population in the region.

Preliminary Conceptual Scheme of the Railway Proposal

8.10 The proposed Kwu Tung Station is located between Lok Ma Chau Station of the Lok Ma Chau Spur Line and Sheung Shui Station of the East Rail Line (see Fig. 8.1).

[5] KTN NDA is situated along the Lok Ma Chau Spur Line, and can easily access to the Lok Ma Chau Spur Line Control Point and Lo Wu Control Point.

Fig. 8.1: Preliminary Conceptual Scheme of the Kwu Tung Station

8.11 Provisions have been made near Kwu Tung along the Lok Ma Chau Spur Line for the construction of an underground railway station. At present, the journey time between Lok Ma Chau Station and Sheung Shui Station is around 12 minutes; if the Kwu Tung Station is added, trains would need to stop at one more intermediate station and the overall journey time would be slightly lengthened.

8.12 As the Hung Hom to Admiralty Section of the Shatin to Central Link is scheduled for completion in 2020, the East Rail Line will be extended to the HKCEC and Admiralty to form the North South Corridor without the need for an interchange. The consultant considers that passengers boarding at Kwu Tung Station will mainly travel to and from the urban area via the North South Corridor. It is estimated that the section from Tai Wai Station to Kowloon Tong Station will be the busiest during morning peak hours in 2031. If the Kwu Tung Station is added, the one-direction traffic in this section would increase from 51,000 to 54,000 passengers per hour (see Table 8.2).

Table 8.2: Impacts generated on the North South Corridor by the Kwu Tung Station

Forcast usage of the section from Tai Wai Station to Kowloon Tong Station of the North South Corridor during morning peak hours in 2031				
Scenario	**Assumed train frequency (per hour)**	**One-direction passenger capacity estimated by the consultant (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Kwu Tung Station	29	Approximately 80,000	Approximately 54,000	Approximately 68%
Without Kwu Tung Station			Approximately 51,000	Approximately 64%

8.13 In the Stage 1 public engagement exercise, the Northern Link was put forward by the consultant, which included an option of connecting Kam Sheung Road Station of the West Rail Line and the KTN NDA (see Fig. 8.3). If the above option of the Northern Link is implemented, the consultant considers that the Kwu Tung Station might be added to the existing Lok Ma Chau Spur Line at the same time. This would enable passenger interchange between the two railway lines, and achieve better synergy through facilitating more effective east-west movement for residents of the New Territories.

Fig. 8.3: Kwu Tung Station and the Northern Link

8.14 By then, some passengers may prefer to use the Northern Link and East West Corridor to travel to and from the urban area, rather than using the North South Corridor. The consultant suggests that it may be necessary to reassess the impacts on the North South Corridor induced by the Kwu Tung Station in view of the actual needs.

Other Railway Facilities

8.15 The consultant preliminarily assesses that the addition of the Kwu Tung Station would have minor impacts on railway operation. The existing railway depot should be sufficient to address the daily operation needs.

Key Consultation Points

8.16 To better understand the public needs and considerations so as to help us further plan the Kwu Tung Station, we would like to invite comments from the public on the following questions –

(a) Do you agree that the Government should plan the Kwu Tung Station in tandem with the KTN NDA to satisfy the local transport demand?

(b) Adding an intermediate station along an existing railway line may increase the overall journey time. In your opinion, what conditions should be considered when new intermediate stations are added? Why?

(c) In general, under what circumstances would you support the implementation of the Kwu Tung Station? Why?

9. Public Engagement

9.1 The document sets out the Stage 2 study findings and local enhancement schemes (see Fig. 9.1).

Fig. 9.1: Local Enhancement Schemes proposed in the Stage 2 Study

9.2 We look forward to receiving the views of the community. Please send us your views through the channels below on or before 20 May 2013.

Website: **www.ourfuturerailway.hk**
Email: **enquiry@ourfuturerailway.hk**
Phone: **3922 9777**
Fax: **3922 9713**
Post: **Railway Development Office, Highways Department**
1/F, Ho Man Tin Government Offices,
88 Chung Hau Street, Ho Man Tin, Kowloon
Please state "Our Future Railway" on the envelope.

9.3 Railway construction is closely linked with the sustainable development in Hong Kong. In case any railway project is to be taken forward for implementation, we will carry out detailed design and planning for the individual project (including public consultation), and assess the impact of such railway on the social, environmental, economic and other aspects.

Transport and Housing Bureau
Highways Department
February 2013

Railway Development in Hong Kong since 2000

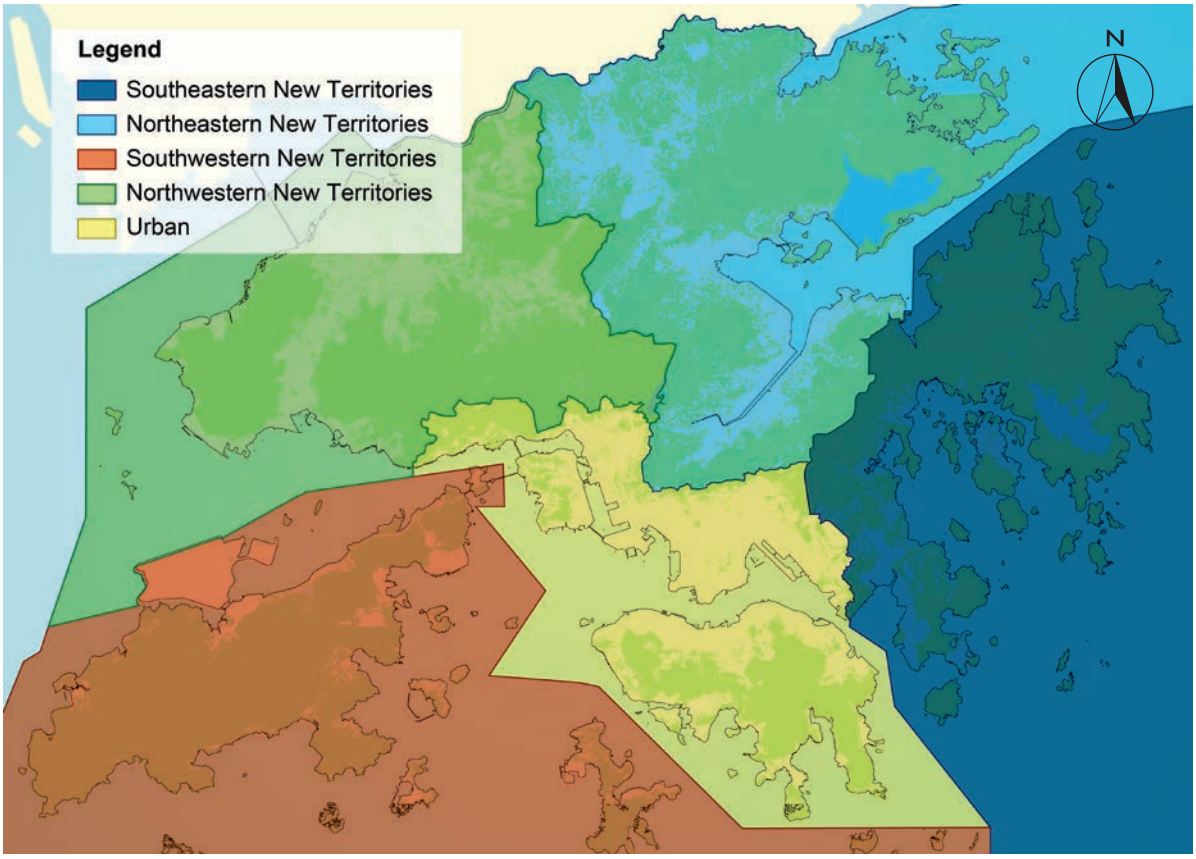
New Railway Lines, Spur Lines and Extensions

Railway Projects	Year of Commission	Description
Tseung Kwan O Line	2002	The line initially served seven stations including North Point, Quarry Bay, Yau Tong, Tiu Keng Leng, Tseung Kwan O, Hang Hau and Po Lam. It provides interchanges with the Island Line and Kwun Tong Line.
West Rail Line	2003	The line initially served nine stations including Tuen Mun, Siu Hong, Tin Shui Wai, Long Ping, Yuen Long, Kam Sheung Road, Tsuen Wan West, Mei Foo and Nam Cheong. It provides interchanges with the Light Rail, Tsuen Wan Line and Tung Chung Line.
East Rail Line Tsim Sha Tsui Extension	2004	An extension of the original East Rail Line from Hung Hom Station to a new East Tsim Sha Tsui Station.
Ma On Shan Line	2004	The line has nine stations including Wu Kai Sha, Ma On Shan, Heng On, Tai Shui Hang, Shek Mun, City One, Sha Tin Wai, Che Kung Temple and Tai Wai. It provides an interchange with the East Rail Line.
Disneyland Resort Line	2005	The line has two stations including Sunny Bay and Disneyland Resort. It provides an interchange with the Tung Chung Line.
Lok Ma Chau Spur Line	2007	A spur line joining the East Rail Line at Sheung Shui Station and extending to serve Lok Ma Chau Station.
Tseung Kwan O Extension (Phase II)	2009	A spur line joining the Tseung Kwan O Line at Tseung Kwan O Station and extending to LOHAS Park Station.
Kowloon Southern Link	2009	An extension of the original West Rail Line from Nam Cheong Station to serve two stations including Austin and East Tsim Sha Tsui, joining the East Rail Line at Hung Hom Station through the Tsim Sha Tsui Extension of the East Rail Line.

Railway under Construction

Railway Projects	Progress	Description
West Island Line	Construction commenced in 2009 and is expected to complete in 2014.	An extension of the original Island Line from Sheung Wan Station to serve three stations including Sai Ying Pun, Hong Kong University and Kennedy Town.
Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link	Construction commenced in 2010 and is expected to complete in 2015.	The line will start at West Kowloon and extend to the Huanggang border area to connect with the mainland section, serving five stations including West Kowloon, Futian, Shenzhen North (Longhua), Humen and Guangzhou South (Shibi).
South Island Line (East)	Construction commenced in 2011 and is expected to complete in 2015.	The line will have five stations including South Horizons, Lei Tung, Wong Chuk Hang, Ocean Park and Admiralty. It will provide interchanges with the Island Line, Tsuen Wan Line and North South Corridor (i.e. the existing East Rail Line and Hung Hom to Admiralty Section of the Shatin to Central Link under construction).
Kwun Tong Line Extension	Construction commenced in 2011 and is expected to complete in 2015.	An extension of the original Kwun Tong Line from Yau Ma Tei Station to serve two stations including Ho Man Tin and Whampoa. It will provide an interchange with the East West Corridor (i.e. the existing Ma On Shan Line, Tai Wai to Hung Hom Section of the Shatin to Central Link under construction and existing West Rail Line).
Shatin to Central Link	Construction commenced in 2012. The Tai Wai to Hung Hom Section is expected to complete in 2018 and the Hung Hom to Admiralty Section is expected to complete in 2020.	The line will have ten stations including Tai Wai, Hin Keng, Diamond Hill, Kai Tak, To Kwa Wan, Ma Tau Wai, Ho Man Tin, Hung Hom, Exhibition and Admiralty. The Tai Wai to Hung Hom Section is the extension of the Ma On Shan Line to form the East West Corridor with the West Rail Line. The Hung Hom to Admiralty Section is the extension of the East Rail Line to form the North South Corridor.

Population and Employment Distribution of Different Districts in Hong Kong



Population and Employment Distribution of Different Districts in Hong Kong

Population (Million)[6]

District	2016	2021	2026	2031
Urban	4.31	4.48	4.64	4.61
Northeastern New Territories	1.32	1.36	1.41	1.53
Southeastern New Territories	0.47	0.51	0.53	0.53
Northwestern New Territories	1.15	1.24	1.30	1.48
Southwestern New Territories	0.18	0.21	0.27	0.31

Employment (Million)[7]

District	2016	2021	2026	2031
Urban	2.67	2.73	2.71	2.69
Northeastern New Territories	0.39	0.40	0.40	0.43
Southeastern New Territories	0.10	0.11	0.10	0.10
Northwestern New Territories	0.28	0.29	0.32	0.33
Southwestern New Territories	0.11	0.13	0.15	0.15

[6] All figures have been rounded off.
[7] All figures have been rounded off.

OUR FUTURE RAILWAY

我們未來的鐵路

Stage 2 Public Engagement Consultation Digest

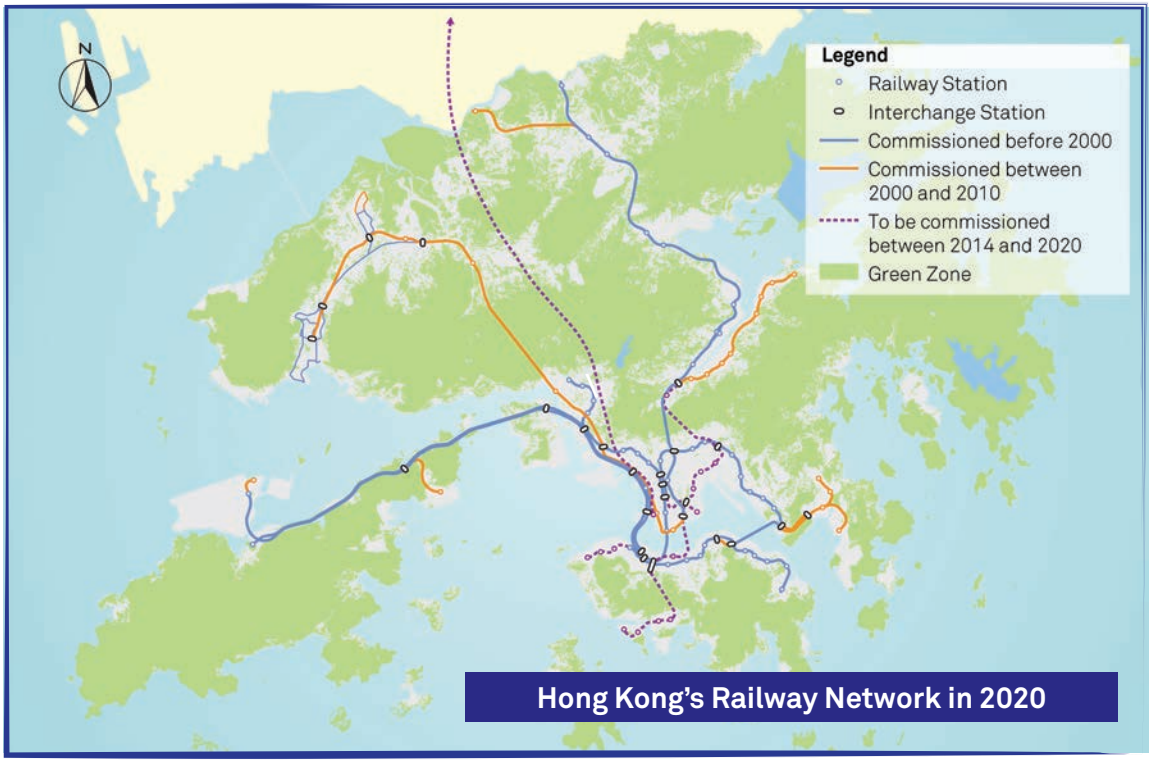
Inviting your participation

To further map out our long-term railway development blueprint, the Government is reviewing and updating the Railway Development Strategy 2000. You are cordially invited to participate in the Stage 2 Public Engagement exercise and plan for our future railway together.

Contents

Background

We are taking forward five railway projects in full swing. They include the West Island Line, Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, South Island Line (East), Kwun Tong Line Extension and Shatin to Central Link. These five railway projects will be completed between 2014 and 2020.



Hong Kong's Railway Network in 2020

As stated by the Chief Executive in the 2013 Policy Address, public demand for land is generated as much from the surging population as from people's aspirations for more space to alleviate their cramped living conditions. The Government will continue to adopt a multi-pronged approach and step up its efforts to meet housing and other needs. For this purpose, we will increase the supply of land in the short, medium and long terms through optimal use of developed land and identifying new land for development at the same time.

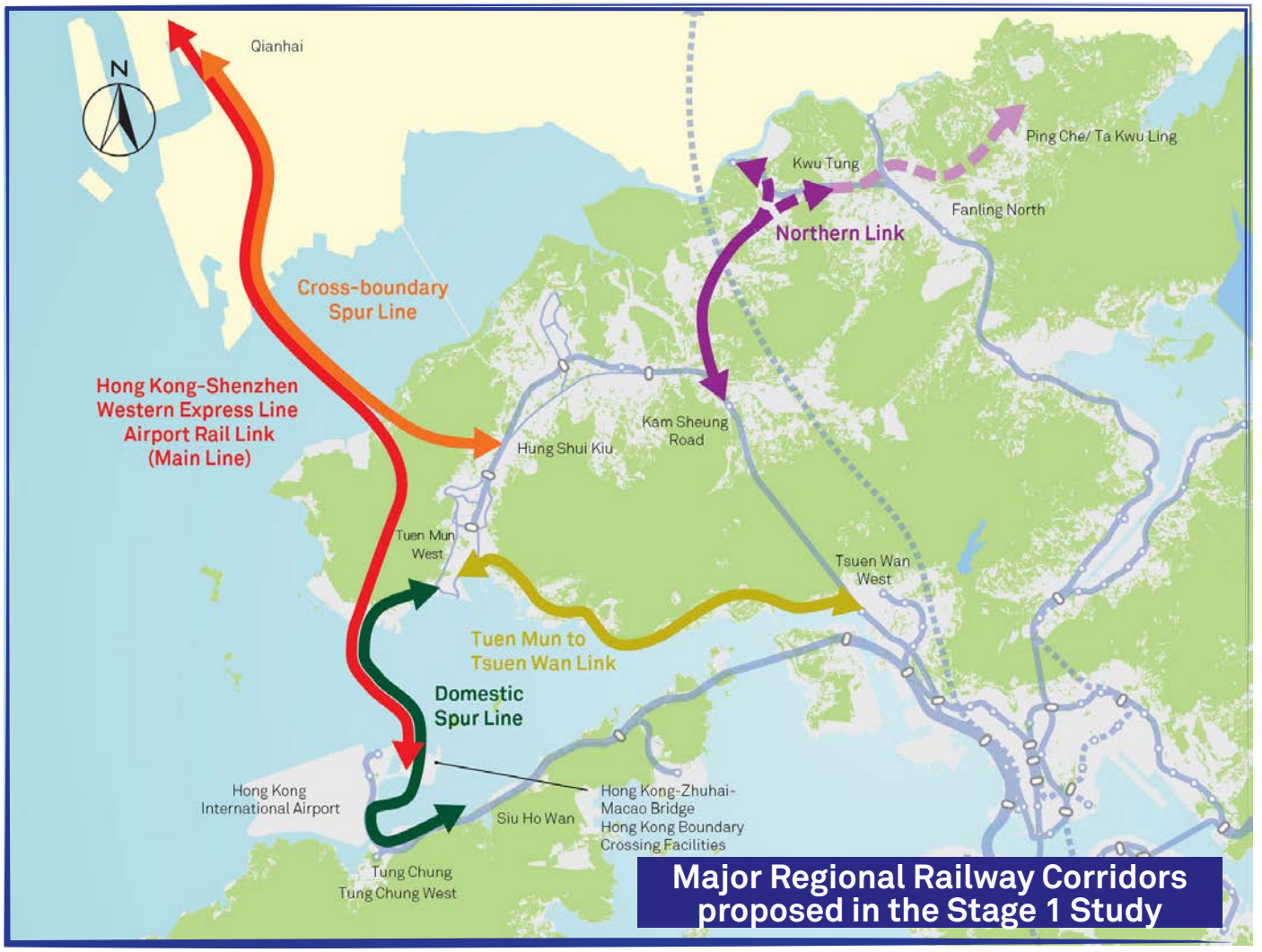
Development of rail transport will not only significantly speed up passenger flow, alleviate road traffic congestion and reduce vehicle-induced air pollution; but also release the development potential of peripheral areas and facilitate local development and economic activities.

If railway planning and land development can be properly integrated, it may create synergy in broadening the living space for residents and promoting developments on various aspects in Hong Kong.

Railway projects involve enormous investment of public funds and have profound impacts on society, people's livelihood and economic development, thus different sectors of the society may offer diverse views and recommendations. The issue on how to cohesively integrate railway planning and land development will need to be examined within the community of Hong Kong.

The Government commenced the consultancy study for the Review and Update of the Railway Development Strategy 2000 in March 2011. During the Stage 1 public engagement exercise between April and July 2012, we put forward three major regional railway corridors – the Hong Kong-Shenzhen Western Express Line, Northern Link and Coastal Railway between Tuen Mun and Tsuen Wan (Tuen Mun to Tsuen Wan Link).

To collect more comprehensive public opinions on various railway projects, we are conducting the Stage 2 public engagement exercise to discuss the local enhancement schemes.



Major Regional Railway Corridors proposed in the Stage 1 Study

Study Focus and Methodology

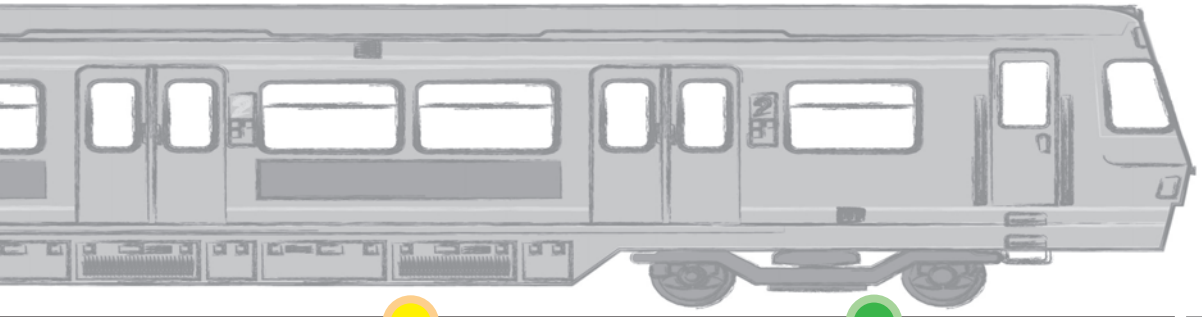
On the basis of the Railway Development Strategy 2000 (RDS-2000), this study assesses whether new railway projects or improvements to the existing railway network are required -

(a) To cover more areas and provide railway service to more people;

(b) To connect major infrastructures and new development areas to enhance their accessibility; and

(c) To relieve bottlenecks of the railways and trunk roads

in order to review and update the long-term railway development blueprint of Hong Kong.



Stage 1: Major Regional Railway Corridors

The consultant conducted the passenger transport demand forecasts and reviewed the demand for major regional railway corridors serving key development areas. The Stage 1 public engagement exercise was carried out between 20 April and 21 July 2012.

Stage 2: Local Enhancement Schemes

Stage 2 focuses on optimisation and integration of the railway network and study of local enhancement schemes, such as assessing the need for constructing parallel lines, line extensions or spur lines, or adding new stations etc., to increase the overall capacity of the railway network and reduce road-based feeder needs.

After Stage 2 Public Engagement Exercise

We will request the consultant to collate the public opinions collected at both stages, such that the planning of the major regional railway corridors and local enhancement schemes can be further optimised in a coordinated manner. The consultant will provide recommendations on future railway development which serve as the basis for the formulation of the future railway development strategy in Hong Kong.

Stage 2 Study Findings

Traffic Capacity of Existing Railways

- At present, the railway network of Hong Kong consists of ten railway lines, coupled with the Light Rail network in the northwestern New Territories. Depending on its design, each railway line has a different traffic capacity.
- The traffic capacity of a railway line is measured in terms of its one-direction passenger capacity per hour. The more passengers a railway line may carry, the higher the traffic capacity. Various factors come into play, including train type, number of cars in a train, train frequency, signalling system and alignment etc.

Designed Maximum One-Direction Passenger Capacity of Different Railway Lines

Railway line	Designed maximum one-direction passenger capacity (pax/hour)
East Rail Line	Approximately 101,000
Kwun Tong Line, Tsuen Wan Line, Island Line, Tseung Kwan O Line	Approximately 85,000
Tung Chung Line	Approximately 66,000
West Rail Line	Approximately 64,000
Ma On Shan Line	Approximately 32,000
Disneyland Resort Line	Approximately 10,800
Airport Express	Approximately 10,000

- Due to safety considerations and limitations on the signalling system, there is an upper limit of the train frequency for each railway line. Moreover, train types and numbers of cars to be used are restricted by the track and station design.
- In case a railway line can no longer cater for the growth in transport demand, it may be necessary to consider building parallel lines to increase the traffic capacity.

Railway Usage in Peak Hours

- On a normal day, two traffic peaks on the existing railway lines can be observed in the morning and evening respectively. During morning peak hours, most passengers travel from residential areas to the Central Business Districts (CBDs). The traffic flow reverses in the evening peak.
- As most residents commute for work at about the same time each morning and finish work at different hours of the day, railway lines are generally more crowded in the morning peak than the evening peak.

Usage of Major Railway Lines during Peak Hours in 2011

Railway line	Average train loading during morning peak hours[1]	Average train loading during evening peak hours[1]
Tsuen Wan Line	Tsim Sha Tsui Station to Admiralty Station Approximately 74%	Admiralty Station to Tsim Sha Tsui Station Approximately 69%
Tseung Kwan O Line	Yau Tong Station to Quarry Bay Station Approximately 72%	Quarry Bay Station to Yau Tong Station Approximately 55%
Island Line	Tin Hau Station to Causeway Bay Station Approximately 70%	Wan Chai Station to Causeway Bay Station Approximately 71%
East Rail Line	Tai Wai Station to Kowloon Tong Station Approximately 69%	Kowloon Tong Station to Tai Wai Station Approximately 64%
Kwun Tong Line	Shek Kip Mei Station to Prince Edward Station Approximately 65%	Prince Edward Station to Shek Kip Mei Station Approximately 64%
West Rail Line	Kam Sheung Road Station to Tsuen Wan West Station Approximately 65%	Tsuen Wan West Station to Kam Sheung Road Station Approximately 58%
Tung Chung Line	Kowloon Station to Hong Kong Station Approximately 61%	Hong Kong Station to Kowloon Station Approximately 42%
Ma On Shan Line	Che Kung Temple Station to Tai Wai Station Approximately 54%	Tai Wai Station to Che Kung Temple Station Approximately 41%

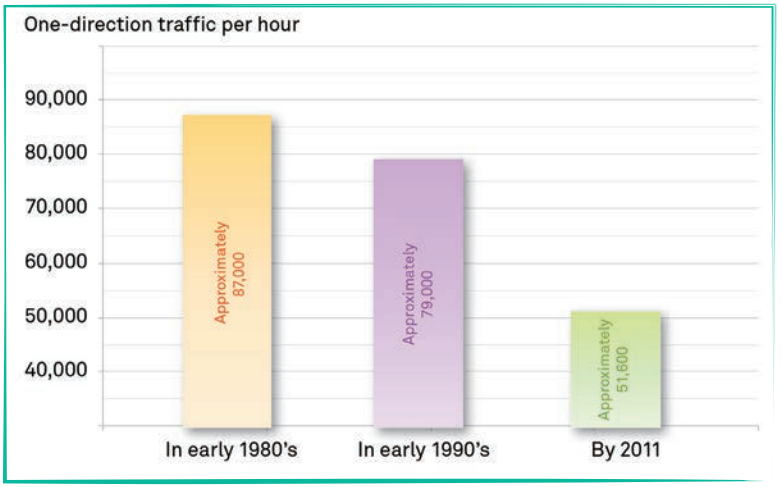
- The consultant considers that the need for relieving railway traffic is more critical for only one or two hours in the morning. Where practicable, one should first investigate whether the train frequency along the existing railway lines can be further increased during morning peak hours.
- If the railway line is operating with a close-to-limit train frequency, it may be more effective to relieve the traffic by implementing a new railway project.

[1] The average train loading during morning/evening peak hours is derived from the one-direction patronage between the two busiest stations within an hour in the morning/evening peak, divided by the one-direction passenger capacity of the train trips provided by the railway line. The higher the percentage, the busier the railway lines during peak hours.

Habits of Railway Passengers

- Under most circumstances, railway passengers will not uniformly occupy the space on trains, resulting in an under-utilisation of train capacity. In a single train, cars located at the far ends of a platform have relatively fewer passengers. Within a single car, fewer passengers would stand at the connecting corridor between the cars.
- In this connection, the consultant highlights that the loading of a railway line is unlikely to reach near 100% in daily operation.
- Although actual statistics show that the number of railway passengers in Hong Kong has risen year by year, the peak patronage along the Nathan Road Section (comprising Prince Edward, Mong Kok, Yau Ma Tei, Jordan and Tsim Sha Tsui Stations), a busier section of the railway network in Hong Kong, has been on a decline.

Usage of the Nathan Road Section



- To account for this trend, the consultant considers that passenger expectations on personal space on trains have gradually increased. In the early years, the section from Tsim Sha Tsui Station to Admiralty Station, which follows the Nathan Road Section, was the sole harbour-crossing of the railway network in Hong Kong. Passengers would attempt to squeeze into the trains even when the cars were crowded.
- Nowadays, passengers have more options for harbour-crossing railway lines which operate at a higher train frequency. If a train appears to be rather crowded, passengers might rather wait for another train instead of squeezing into the train to continue their journeys, resulting in a decrease in the train loading.
- It is worth noting that an increasing number of railway passengers read newspapers and use mobile devices, such as tablet computers or smart phones, during their trips in recent years. Personal space on trains may have become their growing concerns.
- To better meet passenger expectations, the consultant considers that the need for railway relief should be reviewed in view of the habits of railway passengers in future.

Passenger Demand for Harbour-crossing Railway Service

- The two busiest sections of the railway network in Hong Kong are both harbour-crossing sections, namely the sections from Tsim Sha Tsui Station to Admiralty Station of the Tsuen Wan Line and Yau Tong Station to Quarry Bay Station of the Tseung Kwan O Line. In addition, the section from Kowloon Station to Hong Kong Station carries the highest number of passengers along the Tung Chung Line. This somehow reflects the huge passenger demand for harbour-crossing railway service.
- Apart from the three harbour-crossing railway lines (i.e. the Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line), the Hung Hom to Admiralty Section of the Shatin to Central Link is expected to be commissioned in 2020, which will extend the existing East Rail Line from Hung Hom across the harbour to the Hong Kong Convention and Exhibition Centre (HKCEC) and Admiralty. This new North South Corridor will serve as the Fourth Harbour-crossing railway line and is expected to relieve the busy conditions on the harbour-crossing section of the Tsuen Wan Line.
- The previous RDS-2000 raised the possibility of constructing a Fifth Harbour-crossing railway line in the long run; nevertheless, the population growth in Hong Kong thereafter has been lower than previously expected, resulting in a drop in the transport demand.
- Based on the latest forecast, the consultant estimates that the average train loadings of the four harbour-crossing railway lines in Hong Kong will maintain at 60% or below during morning peak hours in 2031, and considers that there is no imminent need to build a Fifth Harbour-crossing railway line.

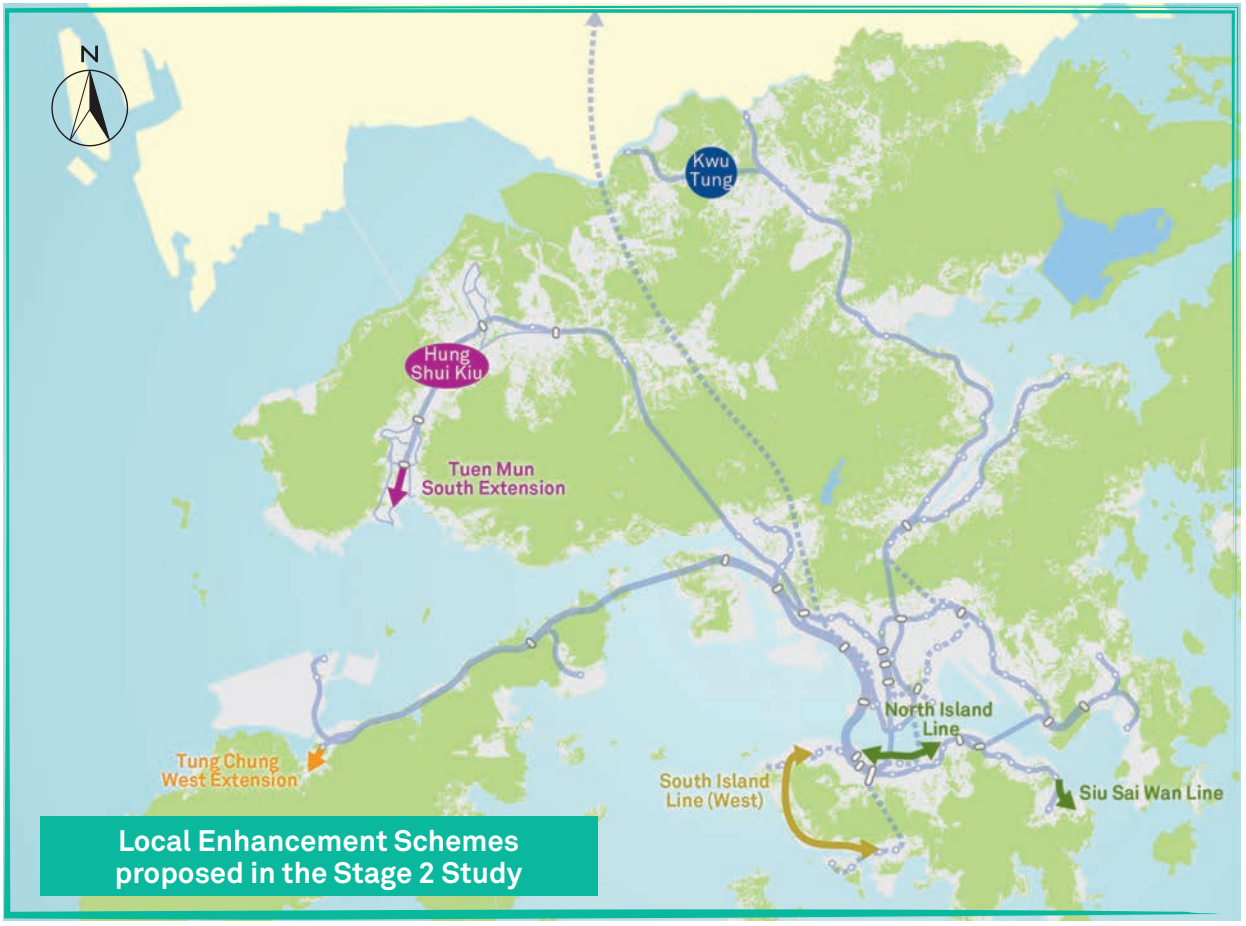
Patronage Forecast of the Four Harbour-crossing Railway Lines during Morning Peak Hours in 2031

Railway line	Busiest harbour-crossing section in single direction	One-direction passenger capacity estimated by the consultant (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
Tsuen Wan Line	Tsim Sha Tsui Station to Admiralty Station	Approximately 85,000	Approximately 51,000	Approximately 60%
Tseung Kwan O Line	Yau Tong Station to Quarry Bay Station	Approximately 85,000	Approximately 42,000	Approximately 49%
North South Corridor	Hung Hom Station to Exhibition Station	Approximately 80,000	Approximately 38,000	Approximately 48%
Tung Chung Line	Kowloon Station to Hong Kong Station	Approximately 66,000	Approximately 29,000	Approximately 44%

- As assessed by the consultant, construction works of a Fifth Harbour-crossing railway line would most probably require reclamation in Victoria Harbour. In 2004, the Court of Final Appeal confirmed in a judgement that the presumption against reclamation in the Protection of the Harbour Ordinance can be rebutted only when the Government can establish the overriding public interest of a reclamation project.
- With reference to the consultant's transport analysis and technical assessment, we consider that a Fifth Harbour-crossing railway line should not be implemented prematurely before its imminent need can be adequately proven. We will continue to monitor the harbour-crossing transport demand and conduct studies in a timely manner to balance the cross-harbour passenger flows.

Based on the evaluation of various conceptual proposals, the consultant puts forward seven local enhancement schemes in the Stage 2 Study for further study and discussion -

- North Island Line
- Siu Sai Wan Line
- South Island Line (West)
- Tuen Mun South Extension
- Hung Shui Kiu Station
- Tung Chung West Extension
- Kwu Tung Station

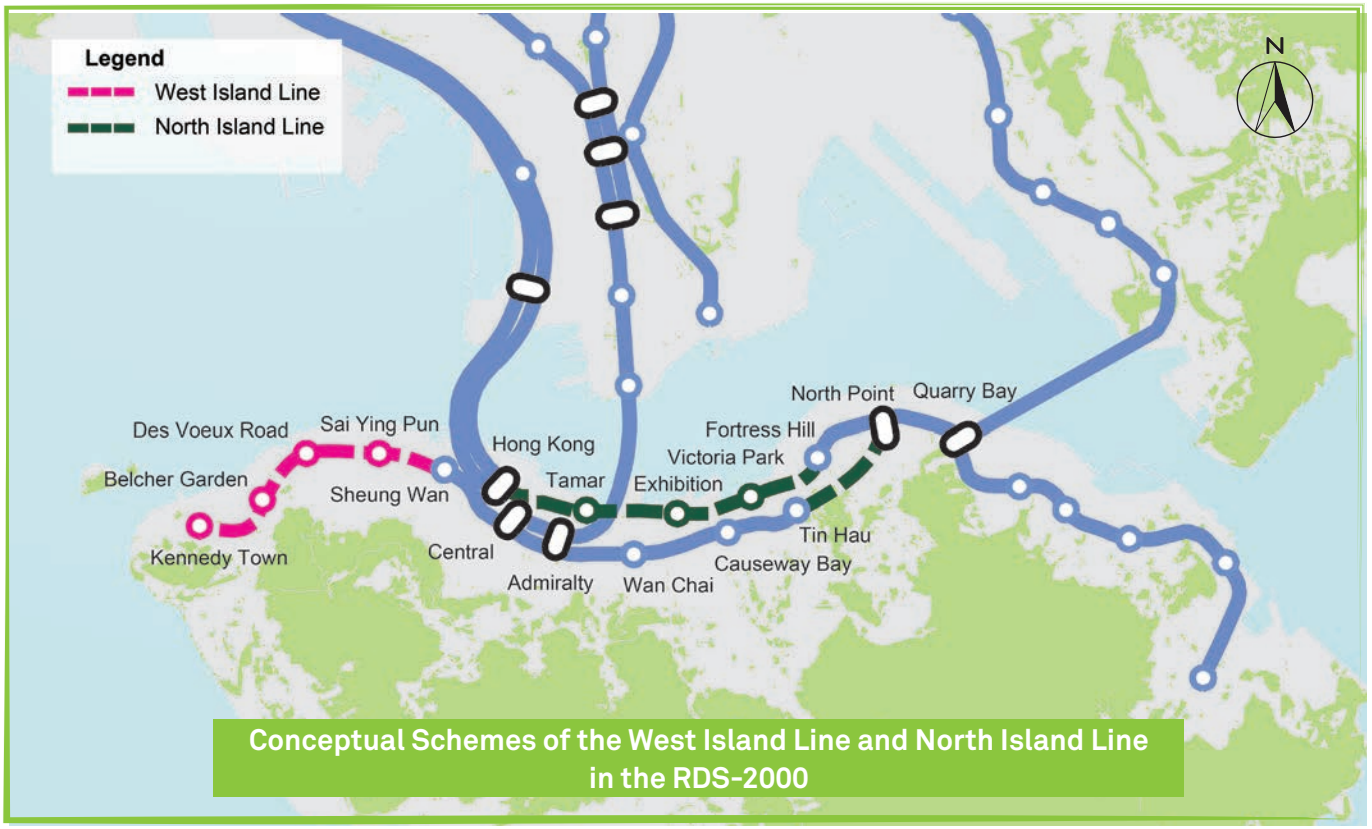


Similar to the major regional railway corridors proposed in the Stage 1 public engagement exercise, the local enhancement schemes identified by the consultant at this stage are conceptual schemes considered to be worthy of further public discussion in the preliminary study. These schemes are presented for the purpose of collecting public opinions.

In the subsequent study, the consultant will conduct more in-depth assessments and benefit analysis to verify the technical feasibility and economic benefits of the preferred proposals.

North Island Line and Siu Sai Wan Line

- The northshore of the Hong Kong Island is a traditional CBD of Hong Kong and home to most residents on the Island. All three existing harbour-crossing railway lines (i.e. the Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line) are connected to the northshore of the Hong Kong Island. The existing Island Line, which currently starts at Chai Wan in the east and ends at Sheung Wan in the west, facilitates the east-west movement of the passengers of the Hong Kong Island.
- In 1994, the Railway Development Strategy (RDS-1) first proposed the construction of the North Island Line and West Island Line to serve the reclamation sites. In 2000, the RDS-2000 considered that the North Island Line would not only address the transport demand of the Central and Wan Chai Reclamation, but could also relieve the Island Line and Tsuen Wan Line. The RDS-2000 also amended the alignment of the West Island Line to run from Sheung Wan to Kennedy Town, instead of connecting to the Green Island Reclamation.



Conceptual Schemes of the West Island Line and North Island Line in the RDS-2000

- In view of the growing public concerns over the protection of the harbour, there were changes to the land planning along the northshore of the Hong Kong Island. One of these changes was the down-scaling of the Central and Wan Chai Reclamation, resulting in a lower residential and employment population forecast for the areas. This substantially undermined the function of the North Island Line in serving the reclamation sites.

- In view of the usage of the Island Line in peak hours, we consider that there is a need to review the planning of the North Island Line, especially on its role in relieving the existing railway lines.

- As for the West Island Line, the Government abandoned the Green Island Reclamation in 2003 and subsequently conducted a detailed study and public consultation of the railway proposal. Construction works of the project commenced in 2009 and are expected to be completed in 2014. By then, the service of the Island Line will be extended to Kennedy Town.

- Separately, Siu Sai Wan, located in the northeastern shore of the Hong Kong Island, has witnessed gradual development since the 1990s. It is now a home to approximately 60,000 residents. Some local residents consider that the Island Line should be extended to Siu Sai Wan. The consultant has examined the feasibility of the relevant project in the light of the latest planning conditions under this review study.

Functions and Planning Considerations

The consultant opines that two factors should be considered when additional railway projects are implemented along the northshore of the Hong Kong Island:

Diversion of harbour-crossing passenger traffic

The Tsuen Wan Line, Tseung Kwan O Line and Tung Chung Line carry cross-harbour passengers to and from the northshore of the Hong Kong Island; yet, the loadings of these three harbour-crossing railway lines are not uniform.

Loading of the Island Line

The Island Line is one of the busiest railway lines with a daily average patronage of approximately 830,000 in 2011, which may further increase to 1,400,000 by 2031.

Diversion of harbour-crossing passenger traffic

- According to a patronage survey, the section from Tsim Sha Tsui Station to Admiralty Station of the Tsuen Wan Line had the highest average train loading during morning peak hours, followed by the section from Yau Tong Station to Quarry Bay Station of the Tseung Kwan O Line. As for the Tung Chung Line, the average train loading of the section from Kowloon Station to Hong Kong Station differed greatly from those of the two other harbour-crossing sections, which was the lowest.
- As compared with morning peak hours, the railway lines were found to have lower loadings during evening peak hours. The section from Admiralty Station to Tsim Sha Tsui Station of the Tsuen Wan Line remained the busiest amongst the three harbour-crossing railway lines, while the average train loadings of the Tseung Kwan O Line and Tung Chung Line were less than 60%, much lower than those during morning peak hours.

Usage of the Three Harbour-crossing Railway Lines during Peak Hours in 2011

Railway section	Average train loading during morning peak hours	Average train loading during evening peak hours
Tsuen Wan Line	Tsim Sha Tsui Station to Admiralty Station Approximately 74%	Admiralty Station to Tsim Sha Tsui Station Approximately 69%
Tseung Kwan O Line	Yau Tong Station to Quarry Bay Station Approximately 72%	Quarry Bay Station to Yau Tong Station Approximately 55%
Tung Chung Line	Kowloon Station to Hong Kong Station Approximately 61%	Hong Kong Station to Kowloon Station Approximately 42%

- The consultant considers that the Tung Chung Line, being geographically closer to the Tsuen Wan Line, has better conditions to accommodate more cross-harbour railway passengers. Theoretically, the Tung Chung Line can be connected to more districts on the Hong Kong Island to enhance its competitiveness, so as to redistribute the cross-harbour trips of the Tsuen Wan Line to the Tung Chung Line.
- Upon completion of the Shatin to Central Link in 2020, the existing East Rail Line will be extended from Hung Hom to the HKCEC and Admiralty to form the North South Corridor. It is expected that a considerable number of railway passengers may switch to this Fourth Harbour-crossing railway line, thus relieving the busy conditions of the harbour-crossing section of the Tsuen Wan Line.
- The consultant considers that the actual usage of the Tsuen Wan Line and Tung Chung Line should be closely monitored in exploring whether there is a need for implementing a new railway project along the northshore of the Hong Kong Island.

Loading of the Island Line

- Being connected to Sheung Wan, Central, Admiralty, Wan Chai, Causeway Bay and other districts with vibrant business activities, the Island Line caters for the commuting trips of a large employment population. Coupled with the fact that the Tseung Kwan O Line only stops at Quarry Bay Station and North Point Station, the loading of the Island Line is more substantial as cross-harbour passengers to Central often need to interchange at North Point Station and share the same train with residents from the Eastern District of the Hong Kong Island.
- During morning peak hours, the demand for westbound service of the Island Line is more substantial. In 2011, the section from Tin Hau Station to Causeway Bay Station was the busiest along the railway line with an average train loading of approximately 70%. The consultant estimates that the average train loading may further increase to approximately 75% or higher by 2031.
- During evening peak hours, the train frequency is reduced. The section from Wan Chai Station to Causeway Bay Station was the busiest with an average train loading of approximately 71% in 2011. The one-direction passenger traffic of the relevant section may continue to rise by 2031, such that the average train loading is not expected to drop significantly even if more trains are operated along the Island Line during evening peak hours.

Busiest Sections of the Island Line during Peak Hours in 2011

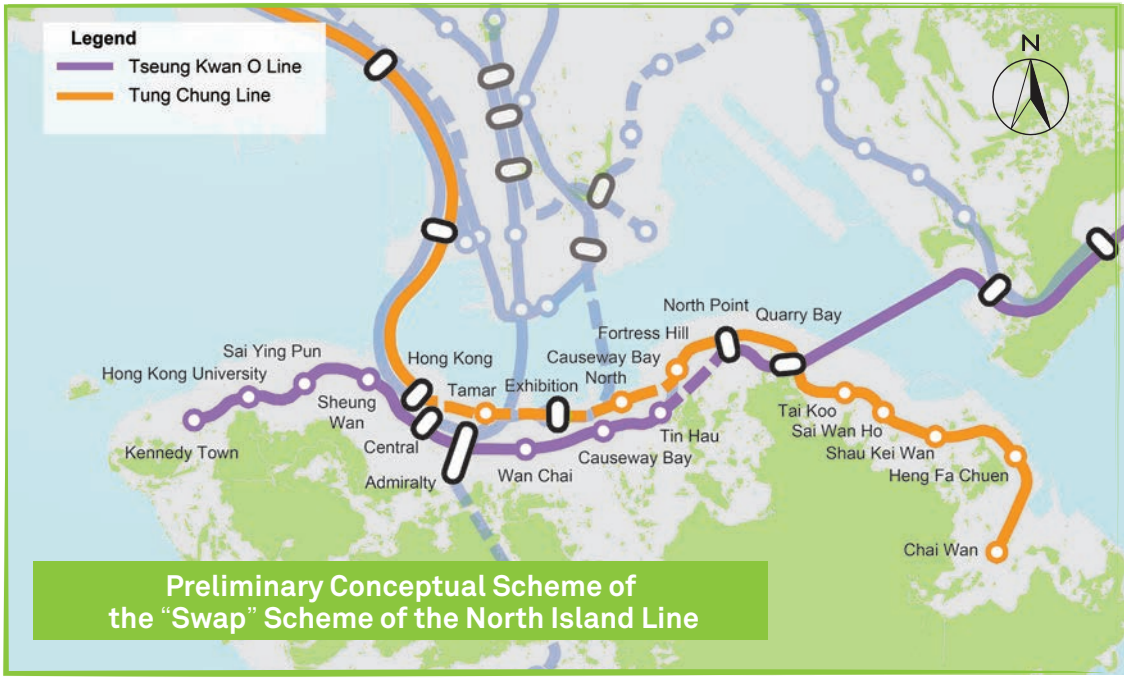
Morning Peak Hours		Evening Peak Hours	
Train frequency (per hour)	Average train loading	Train frequency (per hour)	Average train loading
30	Tin Hau Station to Causeway Bay Station Approximately 70%	26	Wan Chai Station to Causeway Bay Station Approximately 71%
	Fortress Hill Station to Tin Hau Station Approximately 69%		Admiralty Station to Wan Chai Station Approximately 67%
	North Point Station to Fortress Hill Station Approximately 69%		Causeway Bay Station to Tin Hau Station Approximately 63%

- Should an additional railway project be implemented along the northshore of the Hong Kong Island, the consultant considers that its role in relieving the loading of the Island Line would only be more significant for one or two hours in the morning.
- The consultant points out that the patronage of the Island Line may continue to grow in view of the population change along the Tseung Kwan O Line and eastern half of the Island Line, as well as the possibility of new developments in the Central and Western District that would attract more passengers. The consultant suggests that the usage of the Island Line should be closely monitored. This would allow us to review in a timely manner the need for railway relief, and assess whether there is sufficient traffic capacity to extend the Island Line to other districts.

Preliminary Conceptual Scheme – North Island Line

The North Island Line is an extension of the Tung Chung Line and Tseung Kwan O Line along the northshore of the Hong Kong Island, connecting the vicinities of Tamar, the HKCEC and Victoria Park. The major function of this railway project is to relieve the existing railway network, and two possible options are put forward by the consultant –

"Swap" Scheme: Extends the Tung Chung Line and Tseung Kwan O Line in tunnels, and realigns the existing Island Line by dividing it into two separate sections.



Preliminary Conceptual Scheme of the "Swap" Scheme of the North Island Line

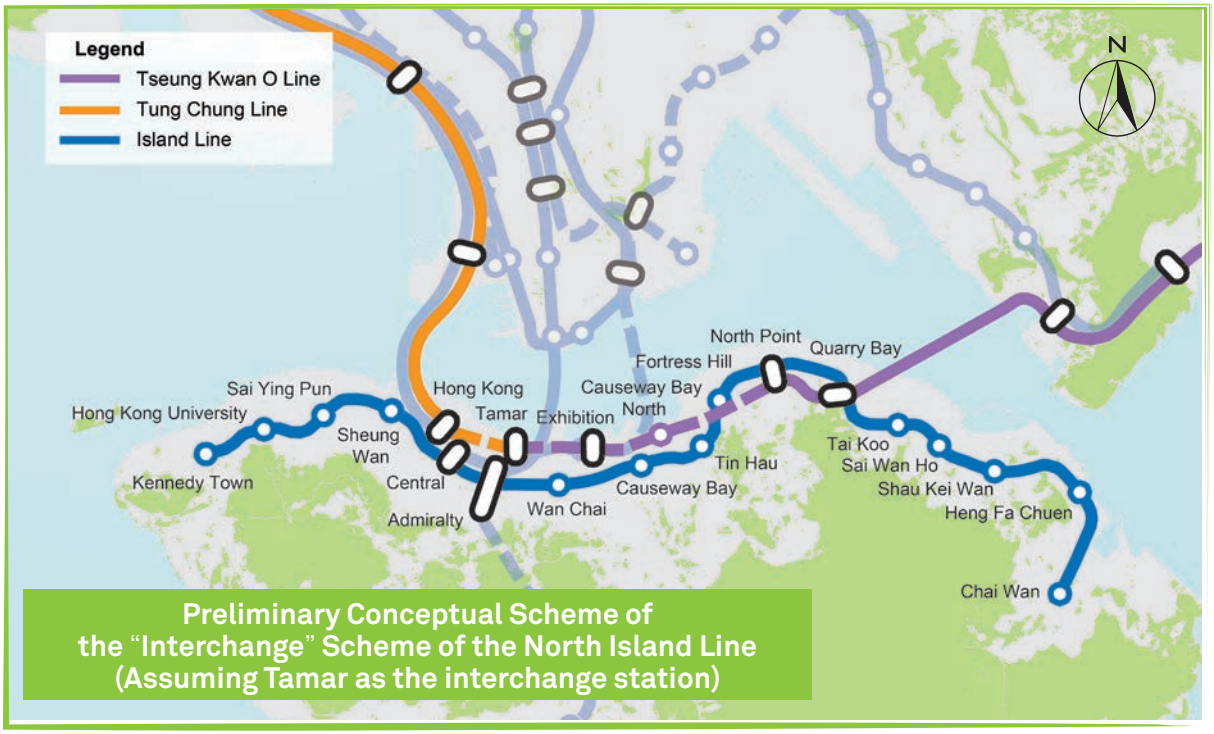
Benefits

- There is a substantial increase in the number of stations which the Tung Chung Line and Tseung Kwan O Line could directly access along the northshore of the Hong Kong Island. This could significantly enhance the competitiveness of these two harbour-crossing railway lines.
- The busiest section of the Island Line runs through North Point to Causeway Bay Stations. By positioning these stations along two separate railway corridors, the scheme could reduce the likelihood of railway bottlenecks in the long run.

Limitations

- The operation of the Island Line would be severed into two halves. Interchange might be required for the east-west journeys along the northshore of Hong Kong Island.
- The train frequency of the Tung Chung Line is restricted by the Tsing Ma Bridge structure. After merging with the Island Line, the maximum train frequency of the eastern half of the Island Line (from Fortress Hill Station to Chai Wan Station) would be reduced by 8 trains per hour.

"Interchange" Scheme: Extends the Tung Chung Line and Tseung Kwan O Line for interchange in the midway, without affecting the existing Island Line. It may be easier to provide an interchange station at Tamar or Causeway Bay North for passengers to interchange.



Preliminary Conceptual Scheme of the "Interchange" Scheme of the North Island Line (Assuming Tamar as the interchange station)

Benefits

- Better balances the travelling needs of different railway passengers. Not only could it provide greater convenience to residents along the Tung Chung Line and Tseung Kwan O Line, this scheme could keep the Island Line intact.
- Could be implemented in phases; either the Tung Chung Line or Tseung Kwan O Line could be extended in advance to relieve the loading of the railway network in a timely manner.

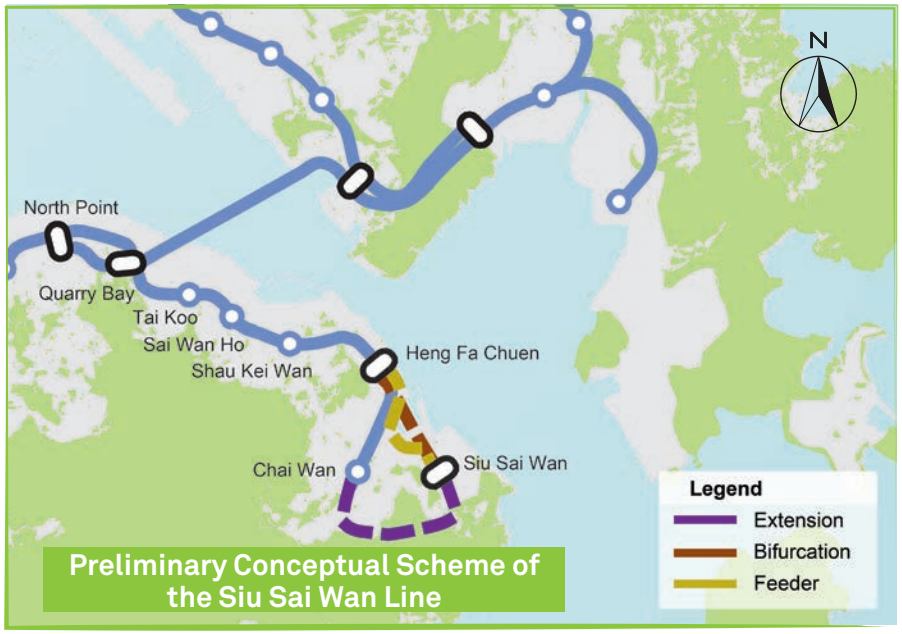
Limitations

- As compared with the "Swap" Scheme, the "Interchange" Scheme would be less effective in terms of railway relief.
- Both the Tung Chung Line and Tseung Kwan O Line would remain unconnected to the existing Island Line. Some passengers would still need to interchange before reaching their destinations.

Other Railway Facilities

If the North Island Line is to be constructed, the consultant preliminarily assesses that it would be necessary to purchase additional trains to cater for the increased transport demand. The existing depots might be used for daily operation, and that no reclamation in Victoria Harbour would be involved.

Preliminary Conceptual Scheme – Siu Sai Wan Line



Preliminary Conceptual Scheme of the Siu Sai Wan Line

Since Siu Sai Wan is a well-developed community where space for railway construction and development is limited, the consultant has reviewed various schemes for the Siu Sai Wan Line, but considers that all these schemes would face considerable technical difficulties.

"Extension" Scheme: Direct extension of the Island Line from Chai Wai Station to Siu Sai Wan

- The existing Chai Wan Station has been built as an elevated structure and is surrounded by a large number of buildings.
- Unless certain buildings (including residential buildings, malls etc.) near the existing Chai Wan Station and along the alignment are demolished, no space is available for building the extension.

"Bifurcation" Scheme: Bifurcation of the Island Line in the Eastern District to Siu Sai Wan

- Construction works of this spur line would probably involve reclamation, in particular filling up the Chai Wan Cargo Handling Basin outside Victoria Harbour.
- When the spur line is in operation, some trains might no longer stop at Chai Wan Station, resulting in a lower service frequency and longer waiting time for the passengers.

"Feeder" Scheme: A new medium capacity railway system dedicated for Siu Sai Wan to connect Heng Fa Chuen Station

- Siu Sai Wan residents using this new railway would need to interchange before reaching the various stations of the Island Line. This would be similar to using the existing road-based feeder services to access Heng Fa Chuen Station.
- Although reclamation might not necessarily be involved in the construction works, permanent resumption of some private land, as well as land for recreational and community facilities purposes, would most probably be required.
- The new railway line would need to be built in the form of viaduct. The railway viaducts might also be very close to residential buildings, creating visual and noise impacts during construction and operation stages.

Photograph of Chai Wan Station on the Island Line

If the Siu Sai Wan Line is implemented, the consultant believes that more residents would travel by rail, thus increasing the loading of the Island Line. The section from Tin Hau Station to Causeway Bay Station would become the busiest section along the Island Line during morning peak hours. It is estimated that the average train loading would be higher than the busiest sections of the Island Line and Tseung Kwan O Line at present. This might affect the daily journeys of cross-harbour passengers of the Tseung Kwan O Line and residents of the Eastern District on the Hong Kong Island.

Impacts generated on the Island Line by Siu Sai Wan Line

Forecast usage of the section from Tin Hau Station to Causeway Bay Station of the Island Line during morning peak hours in 2031			
Scenario	**Designed maximum one-direction passenger capacity (pax/hour)**	**One-direction traffic estimated by the consultant (pax/hour)**	**Average train loading**
With Siu Sai Wan Line	Approximately 85,000	Approximately 67,000	Approximately 79%
Without Siu Sai Wan Line		Approximately 64,000	Approximately 75%

Other Railway Facilities

If the Siu Sai Wan Line is still proceeded, the consultant considers that the Chai Wan Depot near Heng Fa Chuen Station of the Island Line should be used, whenever possible, to minimise land requirement for a depot.

Key Consultation Points

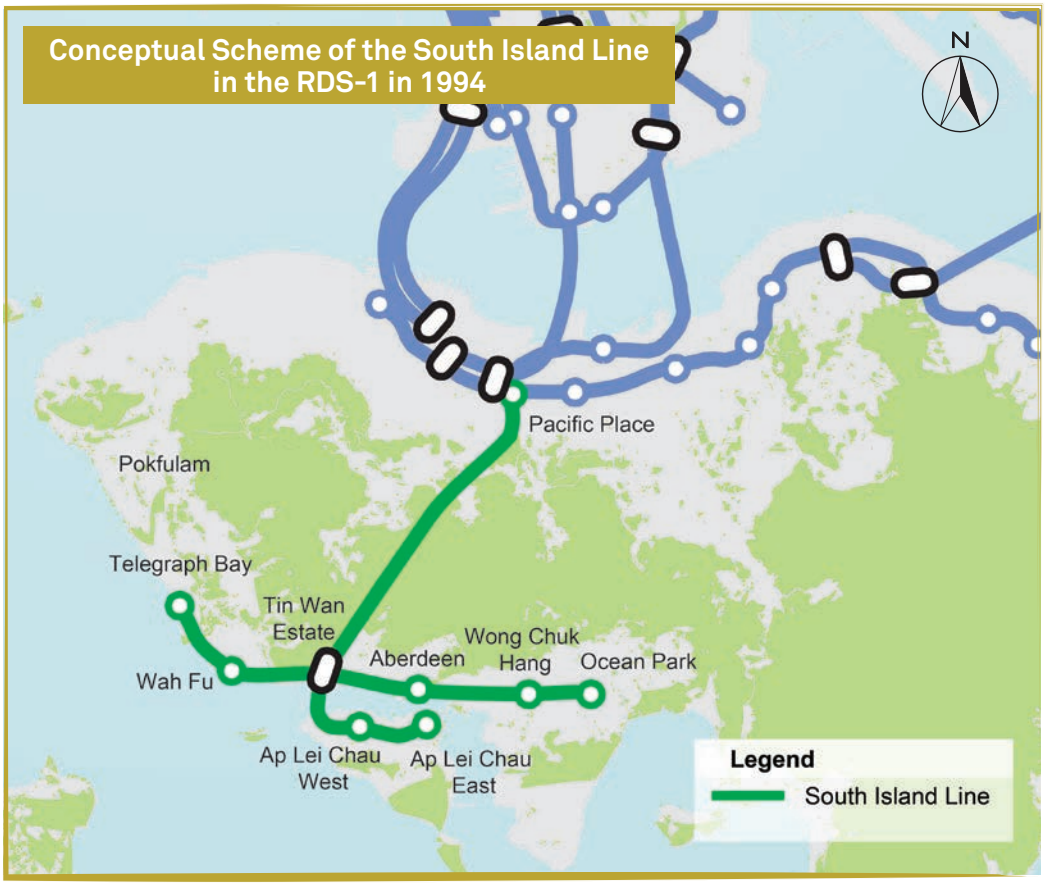
(a) If the North Island Line is to be implemented, would you prefer the "Swap" Scheme or "Interchange" Scheme? Do you have other suggestions?

(b) Given the inadequate space for railway development in Siu Sai Wan, would you accept demolishing existing buildings in the Eastern District or conducting reclamation to construct the Siu Sai Wan Line? Why?

(c) In general, under what circumstances would you support the implementation of the North Island Line and Siu Sai Wan Line along the northshore of the Hong Kong Island? Why?

South Island Line (West)

- A conceptual South Island Line was first set out in the RDS-1 in 1994. The original idea was to construct a medium capacity railway system[2] to connect Aberdeen, Ap Lei Chau, Telegraph Bay (i.e. the present Cyberport area) and Wong Chuk Hang with Admiralty. Connection to Pokfulam area was, however, not considered at that time.



[2] A medium capacity railway system generally refers to a passenger railway with a one-direction passenger capacity of approximately 20,000 to 40,000 passengers per hour. It is more suitable to operate in less populated areas to maintain higher train frequency and provide convenient railway service to passengers.

- At that time, the consultant considered that the South Island Line would help relieve the pressure on the road network. However, they assessed that the road system would have sufficient capacity to meet the anticipated demands and there was no imminent need to build the South Island Line.
- In 2000, the South Island Line was included in the RDS-2000 as a long-term possibility for further review subject to major changes in planning conditions.
- During the 2000s, the Aberdeen Tunnel has become increasingly congested with traffic queues extending from the tunnel to the road network in Wong Chuk Hang in peak hours. Not only does the congestion cause significant traffic delays to and from the Southern District, it also hinders the operation of other road-based transport modes.
- Moreover, development plans for Ocean Park were implemented to increase the number of attractions in order to attract more visitors. The Town Planning Board also approved a number of hotel proposals and lease modifications for some commercial development in Wong Chuk Hang, which are anticipated to further increase the transport demand in the Southern District.
- Taking into account the fact that the external traffic in the vicinities of South Horizons, Lei Tung, Wong Chuk Hang and Ocean Park in the Southern District hinges on the Aberdeen Tunnel, the Government decided to advance the development of the South Island Line (East).
- Whilst the project has commenced construction in 2011 and is expected to be completed in 2015, some locals look forward to the early planning of the South Island Line (West) such that railway service can be extended to cover a larger residential and employment population in the Southern District.

Functions and Planning Considerations

Having considered and assessed the latest planning of the Southern District, the consultant contends that the South Island Line (West) may achieve two functions –

Addresses the growing transport demand in the western part of the Southern District

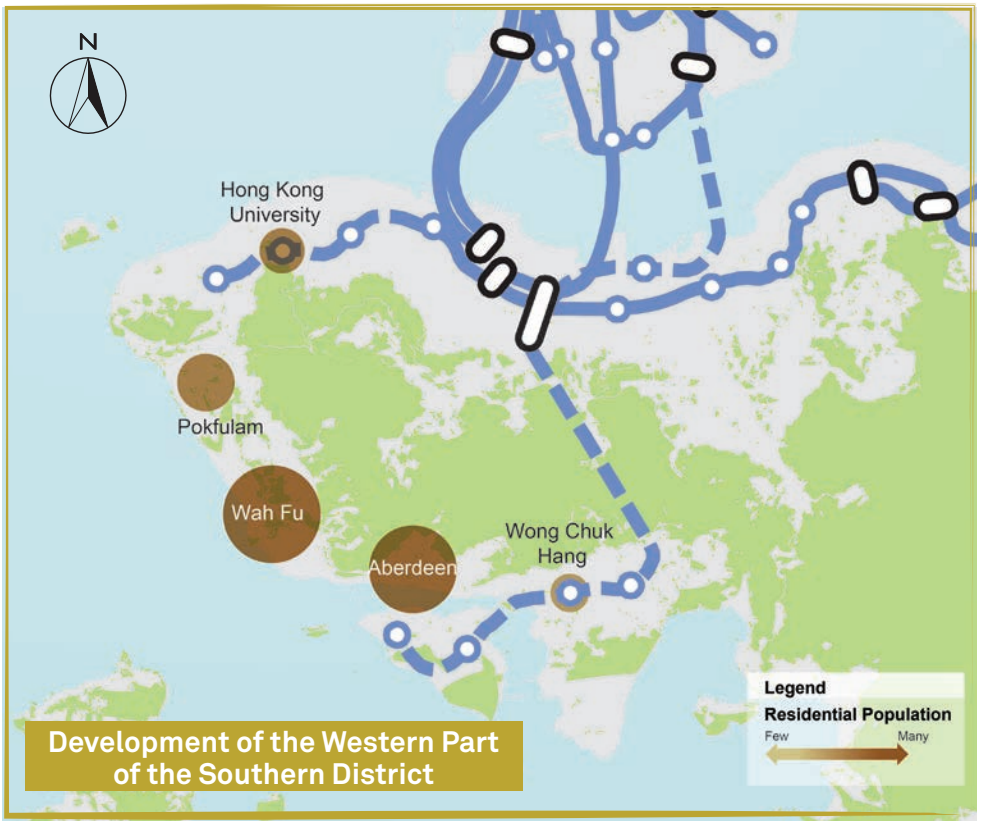
The residential population in the western part of the Southern District is estimated to grow to nearly 100,000 in 2031. If any new development projects are implemented, there would be a greater increase in transport demand.

Serves as a possible relief to the potential pressure on the road network

The hilly terrain and steep slopes in the western part of the Southern District make conditions difficult to conduct further large-scale widening works on Pokfulam Road and Victoria Road. If the local road network could no longer carry the loading, it would affect access to the Queen Mary Hospital.

Addresses the growing transport demand in the western part of the Southern District

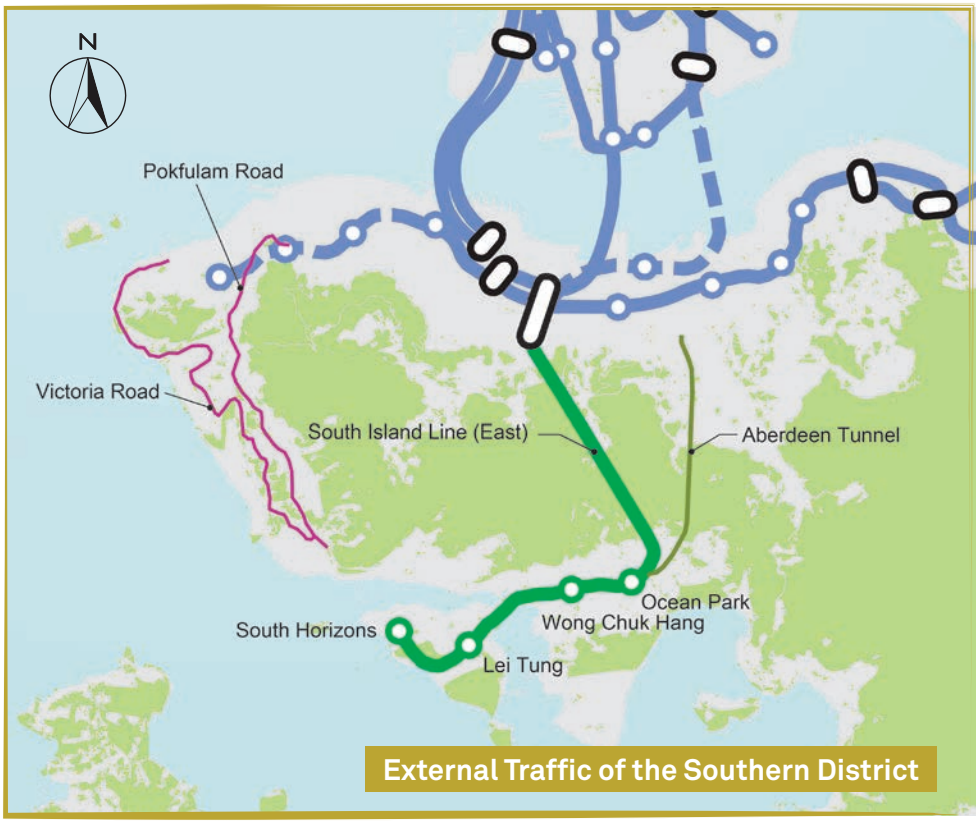
- The residential and commercial nodes in the Southern District mainly stretch along two clusters with one on the west, namely Pokfulam, Cyberport, Wah Fu and Aberdeen, and another lying to the east, namely South Horizons, Lei Tung Estate, Wong Chuk Hang and Ocean Park. The latter will be provided with railway service by the South Island Line (East).
- Based on the population forecast, stations along the South Island Line (East) is expected to serve both the residential and working population of approximately 350,000 in the Southern District by 2016. The Ocean Park, a popular tourist destination, attracts more than 7 million visitors a year and will generate additional transport demands.
- In the long term, along with the natural growth of population in the Southern District, the transport demand in the western part would possibly be equivalent to that of the eastern part. The key growth areas are situated near Wah Fu and Aberdeen. If any new development projects are implemented, it can be expected that there would be a greater increase in transport demand.
- In view of the fact that some land in the western part of the Southern District is yet to be developed, the potential land development opportunities may further increase the number of transport trips. Depending on the development paces of the western part of the Southern District, the consultant considers that it may be necessary in future to construct the South Island Line (West) to provide another mode of transport to the local residents.



Development of the Western Part of the Southern District

Serves as a possible relief to the potential pressure on the road network

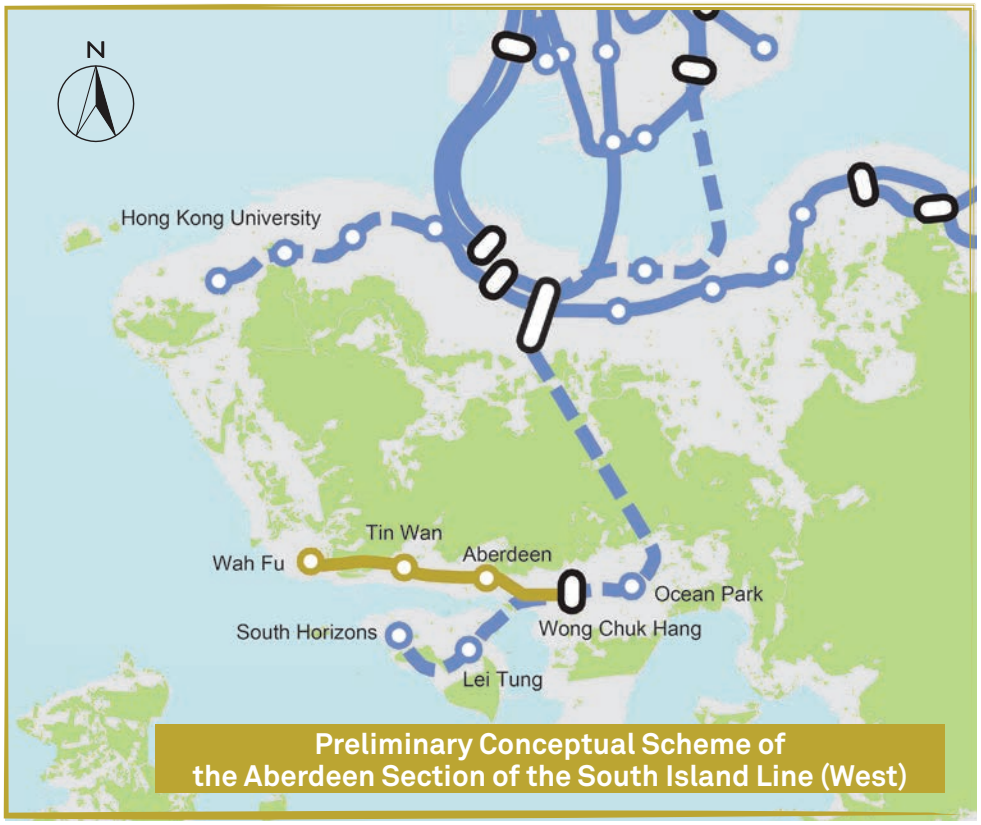
- The external traffic of the western part of the Southern District mainly relies on road-based transport modes. Both Pokfulam Road and Victoria Road are key roads connecting the district to the Central and Western District.
- At present, a number of bus and minibus routes operate along these two roads to serve local residents travelling between Wah Fu/Aberdeen and the Central and Western District. On the other hand, areas near Cyberport and Pokfulam adopt lower development density, and many residents therein travel by private cars.
- In the 2000s, the Government successively implemented different road improvement works, including the completion of the Interchange at Pokfulam Road and Sassoon Road Junction, as well as the Victoria Road Improvements. The room for increasing the traffic capacity of both roads in future is anticipated to be very limited. At present, Pokfulam Road (Southern District Section) and Victoria Road are not as seriously congested as the Aberdeen Tunnel. The need for constructing the South Island Line (West) may not be as imminent as that of the South Island Line (East).
- However, as the population grows in the western part of the Southern District, the consultant thinks that the Government could consider developing a mass transit system in other relatively populated nodes of the Southern District. This system should connect with the South Island Line (East) to encourage passengers to travel to and from the urban area by railway, thus reducing their reliance on road-based transport.



External Traffic of the Southern District

Preliminary Conceptual Scheme of the Railway Proposal

The consultant considers that the South Island Line (West) may be analysed in two sections. The first section may be named as the Aberdeen Section, which starts at Wong Chuk Hang and extends westward to Aberdeen and Wah Fu. The line may also serve Tin Wan along the alignment.

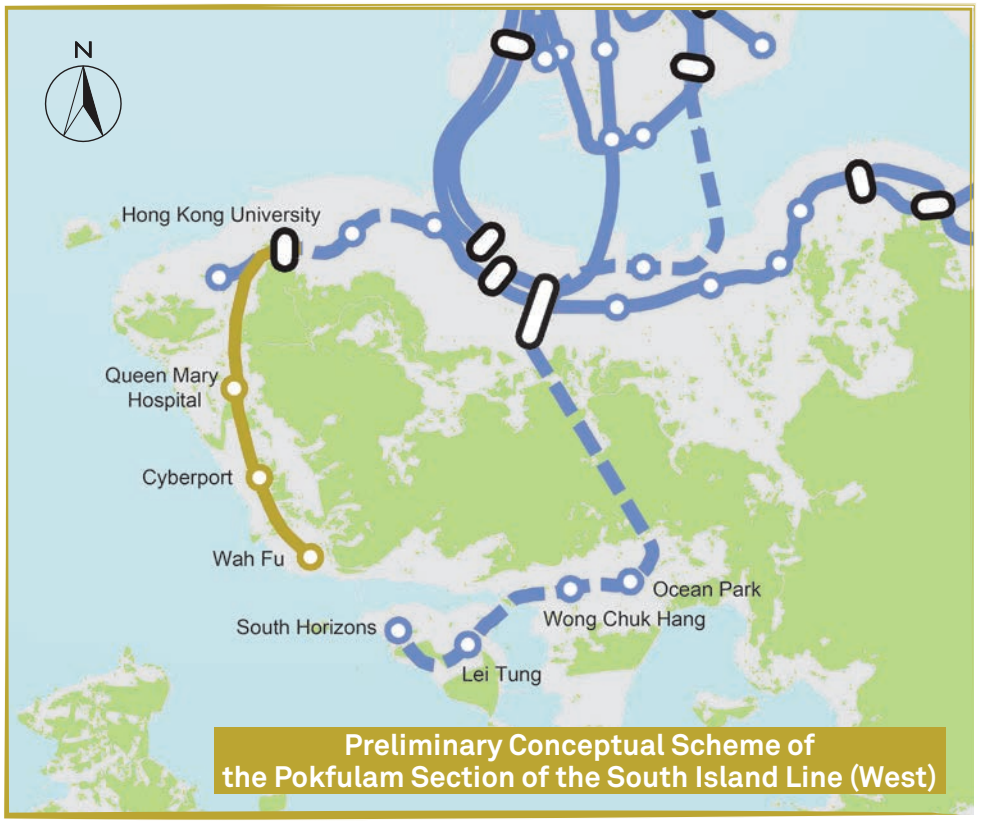


Preliminary Conceptual Scheme of the Aberdeen Section of the South Island Line (West)

As Wong Chuk Hang Station of the South Island Line (East), currently under construction, is designed as an elevated station, passengers of the Aberdeen Section might prefer a convenient interchange arrangement to reach Admiralty. As such, the consultant preliminarily suggests that the railway near Wong Chuk Hang Station should be built in viaduct, whereas the remaining parts from Aberdeen Station to Wah Fu Station could be designed to run mainly underground.

According to the consultant's analyses, Wah Fu and Aberdeen have a higher population density and are expected to experience higher growth in transport demand in future. Through the Aberdeen Section, a shorter alignment, it is believed that the scheme would be able to meet the travelling needs of most residents in the western part of the Southern District. It would also enable some Wah Fu and Aberdeen residents to travel to and from the northshore of the Hong Kong Island without using Pokfulam Road and Victoria Road.

The second section may be named as the Pokfulam Section, which starts at Hong Kong University in Pokfulam and extends southward to Cyberport and Wah Fu. It may also serve the vicinities of the Queen Mary Hospital.



Preliminary Conceptual Scheme of the Pokfulam Section of the South Island Line (West)

However, if Queen Mary Hospital Station is added, the alignment near Cyberport would run through a valley area due to the hilly terrain and steep slopes in Pokfulam. Building this part in tunnel would be extremely difficult, and the railway viaduct might cause visual impact along the alignment.

The consultant is concerned about the potential loading of the South Island Line (East), which might be increased when passengers of the Aberdeen Section interchange merely at Wong Chuk Hang Station to travel to and from the northshore of the Hong Kong Island. In this connection, the consultant suggests making provision for the extension of the South Island Line (West) to Pokfulam, such that the extension might be constructed in view of the actual usage of the South Island Line (East), Pokfulam Road and Victoria Road in future.

Other Railway Facilities

The consultant assesses that the Wong Chuk Hang Depot of the South Island Line (East) could be used to meet the maintenance needs of the South Island Line (West). That said, trains would need to be stabled in other locations. A preliminary idea is to consider developing underground caverns or siding tunnels in the region to reduce land requirement.

Key Consultation Points

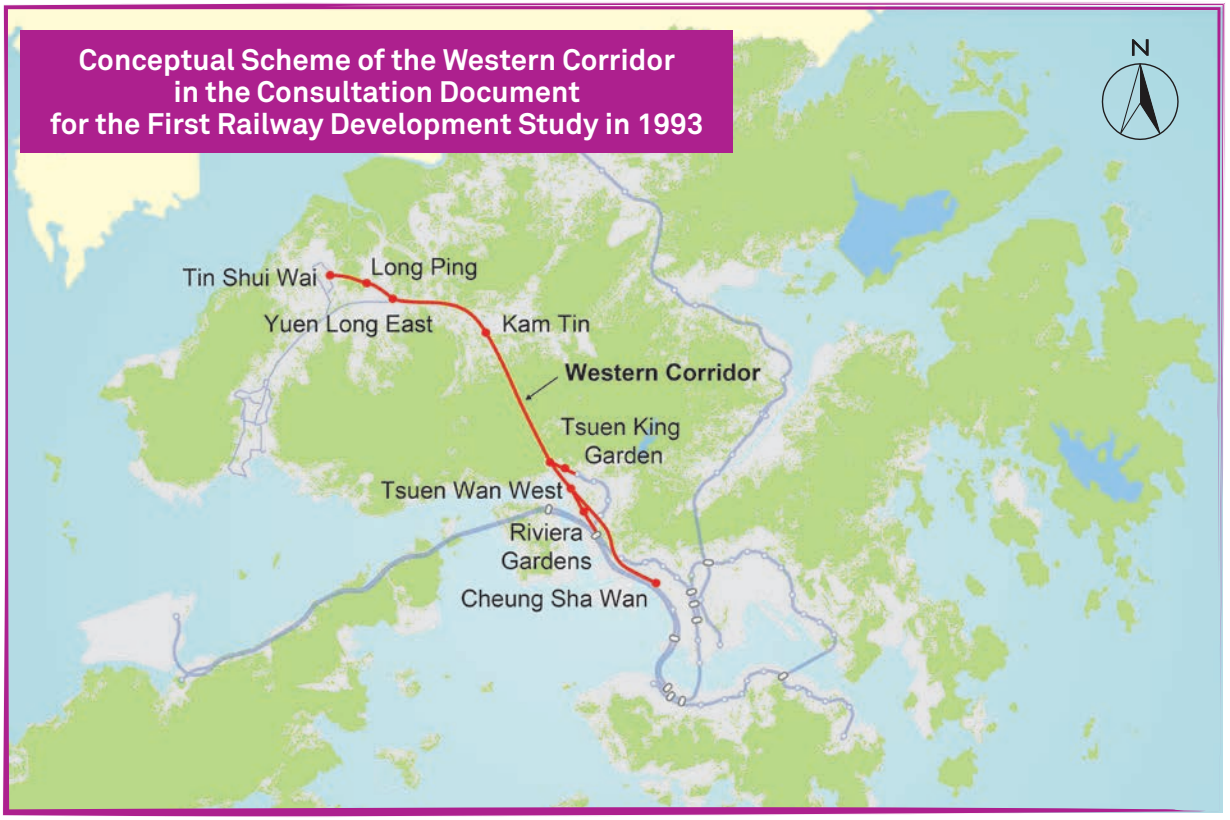
(a) Do you agree that the Aberdeen Section and Pokfulam Section of the South Island Line (West) may be developed in two phases and that railway service should first be developed from Aberdeen to Wah Fu whereas provision be made for the future extension to Pokfulam? Why?

(b) Should the Pokfulam Section of the South Island Line (West) be implemented, the addition of Queen Mary Hospital Station would have bearing on the alignment design. As a result, the section near Cyberport could hardly be constructed in tunnel, and might create visual impact along the alignment. Do you think it is worthwhile to include a Queen Mary Hospital Station? Why?

(c) In general, under what circumstances would you support the implementation of the South Island Line (West)? Why?

Tuen Mun South Extension and Hung Shui Kiu Station

- In 1993, the Government conducted a public consultation for the First Railway Development Study and proposed the construction of the Western Corridor. The original scheme ran from Nam Cheong to Tin Shui Wai only. Having considered the public aspirations for the early provision of passenger railway service from Tuen Mun to the urban area, the Government further reviewed the related conceptual scheme.



- The supplementary study concluded that extending the Western Corridor from Nam Cheong to Tuen Mun North was technically feasible and cost-effective. In 1994, the Government published the RDS-1 and incorporated the recommendations made in the supplementary study, remarking that the Western Corridor might even extend to central Tuen Mun in future. The concept of the Western Corridor was later developed as the West Rail Line, which includes Siu Hong Station at Tuen Mun North and Tuen Mun Station at central Tuen Mun in its final scheme.

- After extensive consultation, construction works of the West Rail Line commenced in October 1998. The railway was eventually commissioned in December 2003, providing railway service between Tuen Mun and Nam Cheong via Hung Shui Kiu (located between Tin Shui Wai Station and Siu Hong Station). Furthermore, the Kowloon Southern Link, proposed as a prioritised project in the RDS-2000, began operation in 2009, further extending the West Rail Line from Nam Cheong to Austin, East Tsim Sha Tsui and Hung Hom Stations.

West Rail Line and Hung Shui Kiu New Development Area (HSK NDA)

- Although two stations (i.e. Tuen Mun Station and Siu Hong Station) are established along the West Rail Line to serve the Tuen Mun New Town, some locals would like to further extend the West Rail Line to Tuen Mun South (in particular near Tuen Mun Ferry Pier) such that more Tuen Mun residents can use railway service more conveniently.
- Separately, the Planning Department (PlanD) and Civil Engineering and Development Department (CEDD) commenced the "Hung Shui Kiu New Development Area Planning and Engineering Study" in 2011 to reinvigorate the planning of the HSK NDA along the West Rail Line. As such, the consultant considers the related ideas and explores whether it would be feasible to implement the Tuen Mun South Extension and Hung Shui Kiu Station as enhancements for the existing railway line.

Functions and Planning Considerations

- Tuen Mun is the most populated new town in the northwestern New Territories with an estimated population of about 490,000. The area near Tuen Mun Ferry Pier is one of the major residential areas in the region, which is currently the home of approximately 90,000 residents. At present, Tuen Mun South residents intending to use the West Rail Line usually travel to Tuen Mun Station by Light Rail or MTRCL feeder bus.

- A large number of bus routes directly connect Tuen Mun to different MTRCL stations in the urban area and various regions on the Hong Kong Island via the Western Harbour Tunnel. Some Tuen Mun South residents may find the point-to-point service provided by existing road-based transport more direct and convenient. A patronage survey revealed that the patronage of the West Rail Line averaged at approximately 360,000 trips per day, which was lower than other heavy railway systems[3]. The West Rail Line has sufficient capacity to address the travelling needs of more passengers under the existing train operating schedule.

Busiest Sections of the West Rail Line in 2011

Morning peak hours		Evening peak hours	
Train frequency (per hour)	Average train loading	Train frequency (per hour)	Average train loading
20	Kam Sheung Road Station to Tsuen Wan West Station Approximately 65%	15	Tsuen Wan West Station to Kam Sheung Road Station Approximately 58%

- As a matter of fact, the West Rail Line has room to increase service frequency and further improve its traffic capacity in view of actual demand.

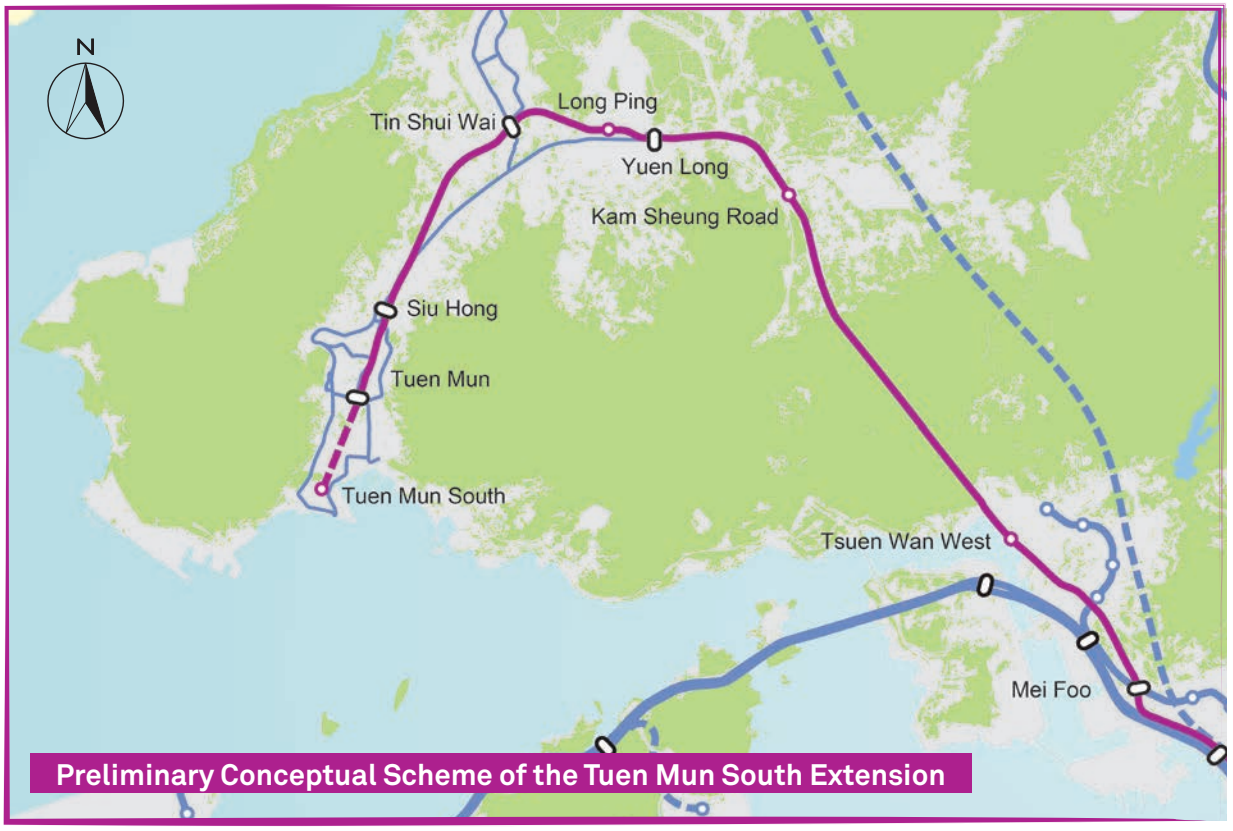
- If the HSK NDA is implemented, it is estimated that the local population would gradually increase to approximately 160,000 by the 2030s, with the employment opportunities increased to around 48,000. It might be necessary to add a Hung Shui Kiu Station along the West Rail Line to directly serve the residential and employment population in the area. However, the consultant of the "Hung Shui Kiu New Development Area Planning and Engineering Study" is currently working on a Preliminary Outline Development Plan and conducting relevant technical evaluation based on the comments received from its Stage 1 community engagement exercise. The above projections may be subject to further amendments.

[3] A heavy railway system refers to a freight railway or a passenger railway with a one-direction passenger capacity of more than 40,000 passengers per hour.

- It is worth noting that construction works of the Tai Wai to Hung Hom Section of the Shatin to Central Link has already commenced for expected completion in 2018. By then, the West Rail Line, Tai Wai to Hung Hom Section of the Shatin to Central Link and Ma On Shan Line will be combined into the East West Corridor. Passengers will be able to travel from northwestern New Territories to East Tsim Sha Tsui, Hung Hom, Kowloon East, Tai Wai, Ma On Shan and Wu Kai Sha without interchange.
- As the East West Corridor will connect to more districts and may render the existing West Rail Line more attractive, the consultant considers that the impact on the loading of the East West Corridor induced by the Tuen Mun South Extension and Hung Shui Kiu Station should be assessed.

Preliminary Conceptual Scheme - Tuen Mun South Extension

The Tuen Mun South Extension considered by the consultant extends the West Rail Line southward from Tuen Mun Station to the vicinities of Tuen Mun Ferry Pier.



Preliminary Conceptual Scheme of the Tuen Mun South Extension

The journey time from Tuen Mun South to Tuen Mun is estimated to be approximately 4 minutes.

Given that Tuen Mun Station is an elevated station and is geographically close to Tuen Mun South, extending the elevated railway across Tuen Mun River to continue underground would result in a gradient too steep for trains to run through. As such, it is proposed that the Tuen Mun South Extension should be planned to run on viaduct.

As the Tuen Mun South Extension will attract some Tuen Mun South residents to use railway service, the consultant has considered whether the extension would increase the loading of the East West Corridor. Based on a preliminary analysis, the consultant forecasts that the section from Tsuen Wan West Station to Mei Foo Station will be the busiest section upon the commissioning of the East West Corridor.

Impacts generated on the East West Corridor by the Tuen Mun South Extension

Forecast usage of the section from Tsuen Wan West Station to Mei Foo Station of the East West Corridor during morning peak hours in 2031			
Scenario	One-direction passenger capacity estimated by the consultant (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
With Tuen Mun South Extension	Approximately 75,000	Approximately 54,000	Approximately 72%
Without Tuen Mun South Extension		Approximately 50,000	Approximately 67%

Should the Tuen Mun South Extension be implemented, the consultant estimates that the three railway stations in the Tuen Mun New Town (i.e. Tuen Mun South, Tuen Mun and Siu Hong Stations) will attract considerable patronage. In the long run, trains along the East West Corridor might be packed with passengers upon leaving Tin Shui Wai Station, in particular during peak hours. Passengers might experience difficulty in boarding at Long Ping, Yuen Long, Kam Sheung Road and Tsuen Wan West Stations. As a result, residents living in these districts may face longer waiting time before getting on the trains along the East West Corridor.

Upon the commissioning of the Kowloon Southern Link in 2009, the West Rail Line was extended from Nam Cheong to Austin, East Tsim Sha Tsui and Hung Hom Stations. The patronage of the West Rail Line immediately rose by 34% in the year. As the East West Corridor will provide passengers along the West Rail Line with direct access to 15 additional stations[4], there are still many uncertainties on the usage of the East West Corridor. The consultant suggests closely monitoring the actual usage of the East West Corridor upon its commissioning in 2018, so as to more accurately evaluate the impacts on the East West Corridor induced by the Tuen Mun South Extension.

Other Railway Facilities

If the Tuen Mun South Extension is implemented, the consultant assesses that the purchase of more trains would be necessary to handle additional passengers, whereas the existing depot of the East West Corridor could be used for daily operation purpose.

[4] The 15 stations are Ho Man Tin, Ma Tau Wai, To Kwa Wan, Kai Tak, Diamond Hill, Hin Keng, Tai Wai, Che Kung Temple, Shatin Wai, City One, Shek Mun, Tai Shui Hang, Heng On, Ma On Shan and Wu Kai Sha

Preliminary Conceptual Scheme - Hung Shui Kiu Station

The proposed Hung Shui Kiu Station is to be located between Tin Shui Wai Station and Siu Hong Station on the West Rail Line. Upon analysis, the consultant considers that it is technically feasible to add a railway station along the elevated railway section.

Preliminary Conceptual Scheme of the Hung Shui Kiu Station

If the Hung Shui Kiu Station is added, trains along the East West Corridor would need to stop at one more intermediate station and the journey time would become slightly longer.

According to the preliminary analysis, the section between Tsuen Wan West Station to Mei Foo Station will be the busiest along the East West Corridor. If the Hung Shui Kiu Station is constructed, the one-direction traffic of this section is estimated to decrease slightly.

Impacts generated on the East West Corridor by the Hung Shui Kiu Station

Forecast usage of the section from Tsuen Wan West Station to Mei Foo Station of the East West Corridor during morning peak hours in 2031			
Scenario	One-direction passenger capacity estimated by the consultant (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
With Hung Shui Kiu Station	Approximately 75,000	Approximately 49,000	Approximately 65%
Without Hung Shui Kiu Station		Approximately 50,000	Approximately 67%

Although the Hung Shui Kiu Station will attract Hung Shiu Kiu residents to use the railway, the consultant considers that some passengers in northwestern New Territories might be concerned about the lengthened railway journey time, and opt for road-based transport to travel to and from the urban area instead. This would offset the additional traffic generated by the Hung Shui Kiu Station for the East West Corridor.

As the actual effect would probably hinge on the provision of road-based transport modes and railway in the area, as well as population distribution and growth in Hung Shui Kiu, the consultant suggests reviewing the conceptual scheme of the Hung Shui Kiu Station in future to further verify its actual benefits.

Other Railway Facilities

The consultant preliminary assesses that the addition of the Hung Shui Kiu Station would have merely minor impacts on railway operation. The existing railway depot should be sufficient to cater for its daily operation needs.

Key Consultation Points

(a) To provide effective railway service in Tuen Mun South, do you consider that the area near Tuen Mun Ferry Pier is the suitable location for constructing a railway extension? Why?

(b) Do you agree that the Government should plan the Hung Shui Kiu Station in tandem with the HSK NDA to satisfy the local transport demand?

(c) Upon completion of the Tai Wai to Hung Hom Section of the Shatin to Central Link, the West Rail Line will become a part of the East West Corridor which runs through northwestern New Territories, East Tsim Sha Tsui, Hung Hom, Kowloon East, Tai Wai, Ma On Shan and Wu Kai Sha. To avoid congestion from arising along the East West Corridor, do you agree that the way forward for the Tuen Mun South Extension and Hung Shui Kiu Station should be decided after the actual usage of the East West Corridor becomes observable? Why?

(d) In general, under what circumstances would you support the implementation of the Tuen Mun South Extension and Hung Shui Kiu Station? Why?

Tung Chung West Extension

- Most of the Tung Chung New Town was developed on reclaimed land, with the first public housing estates being completed and occupied in 1997. According to the original plan, the subsequent development of the Tung Chung New Town would be expanded to more land (including Tai Ho area), which was expected to accommodate a population of approximately 320,000 by 2011.

- In order to support the relevant proposals, the Tung Chung Line was commissioned in June 1998 with its terminus Tung Chung Station located in the centre of the Tung Chung New Town. It provides Tung Chung residents with mass transit service to and from Tsing Yi, Kowloon and Hong Kong Island.

- As a part of the long-term planning of the Tung Chung New Town (including a preliminary proposal on further reclamation for the purpose of new town expansion), the Government reserved a site for constructing a railway station in the possible reclamation area in Tung Chung West: should the new town expand westward in future, railway service could be provided in the area as necessary.

- The population growth in Hong Kong slowed down subsequently. The Government set up the "Lantau Development Task Force" in 2004 and published the "Revised Concept Plan for Lantau" in 2007 which set out a series of revised recommendations for the development of Lantau Island. These include the further development of Tung Chung into a fully planned new town with a design population of around 220,000.

- In order to implement the relevant plan, the Government launched the "Tung Chung New Town Extension Study" in 2012 to identify the development potential and opportunities of Tung Chung and its vicinities with a view to exploring the scale for Tung Chung extension. Some locals believe that the Tung Chung Line should be extended to Tung Chung West as early as possible to enable residents to use the Tung Chung Line more conveniently. As such, the consultant assesses the conceptual Tung Chung West Extension in the light of the latest developments.

Functions and Planning Considerations

- The current residential population of the Tung Chung New Town is approximately 80,000, which is largely different from the previous projection of 320,000 by 2011. At present, development in Tung Chung West is limited to the vicinities of Yat Tung Estate, with the remaining parts being rural villages, fallow land and open countryside subject to detailed planning.
- In order to meet the transport needs of Tung Chung West residents, a large number of bus routes are currently available in the district, including feeder routes to Tung Chung Station, as well as those travelling to and from Tsuen Wan, Ho Man Tin, Tsim Sha Tsui, Hung Hom, Tin Hau, Tseung Kwan O, Tin Shui Wai and Shatin etc., to satisfy diversified travelling needs.
- The consultant considers that the existing Tung Chung Line is capable of carrying more passengers. In 2011, the daily patronage of the Tung Chung Line averaged at approximately 200,000 passengers. Despite the lower service frequency of the Tung Chung Line, with a headway of 4 minutes in peak hours, it appears that the railway managed to satisfy the passenger demand.

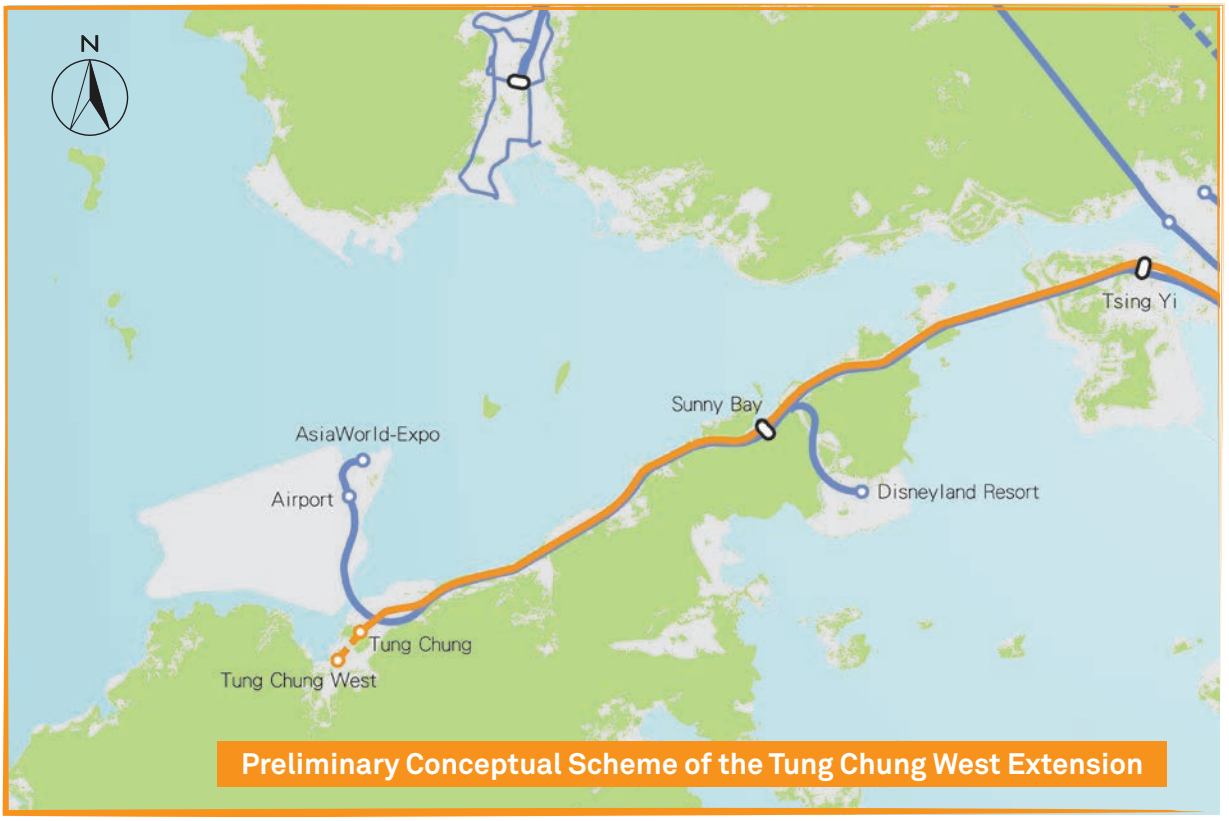
Busiest Sections of the Tung Chung Line in 2011

Morning Peak Hours		Evening Peak Hours	
Train frequency (per hour)	Average train loading	Train frequency (per hour)	Average train loading
15	Kowloon Station to Hong Kong Station Approximately 61%	15	Hong Kong Station to Kowloon Station Approximately 42%

- In assessing the Tung Chung West Extension, the consultant is largely concerned about whether sufficient transport demand exists in Tung Chung West to justify the development of a mass transit system through extending the Tung Chung Line. At present, Tung Chung West is the home to approximately 40,000 residents. If the development density of the land in Tung Chung West, other than Yat Tung Estate, remains low, the population growth of the district will not change prominently.
- Nevertheless, the Housing Department is planning to construct more public housing estates in Tung Chung West, whilst PlanD and CEDD are conducting the "Tung Chung New Town Extension Study" which incorporates Tung Chung West into its Potential Town Extension Zone. Depending on whether these plans will be implemented, new opportunities of land development may arise in Tung Chung West, leading to an increase in the transport demand. In this connection, the consultant contends that it is worthwhile to review the possibility of providing railway service to this area.

Preliminary Conceptual Scheme of the Railway Proposal

Under the conceptual Tung Chung West Extension formulated by the consultant, the Tung Chung Line extends westward from Tung Chung Station to serve the existing and potential development in the region. The estimated journey time from Tung Chung West to Tung Chung is about 4 minutes.



Preliminary Conceptual Scheme of the Tung Chung West Extension

Given that the existing Tung Chung Station is an underground station, the consultant advises that the Tung Chung West Extension could be constructed in tunnels. The planning of the actual alignment needs to be coordinated with the land planning of Tung Chung West and actual development of the community.

Assuming that the Tung Chung West Extension is in place in view of the population growth brought by new town extension, the consultant preliminarily estimates that the section from Kowloon Station to Hong Kong Station would remain as the busiest section of the Tung Chung Line during morning peak hours in 2031, with the one-direction traffic slightly rising.

Impacts generated on the Tung Chung Line by the Tung Chung West Extension

Forecast usage of the section from Kowloon Station to Hong Kong Station of the Tung Chung Line during morning peak hours in 2031			
Scenario	Designed one-direction passenger capacity (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
With Tung Chung West Extension Project	Approximately 66,000	Approximately 30,000	Approximately 45%
Without Tung Chung West Extension Project		Approximately 29,000	Approximately 44%

As the relevant development plan of Tung Chung West is still under detailed study, and the potential implementation of the North Island Line may change the actual usage of the Tung Chung Line, the consultant believes that the Tung Chung West Extension should be further reviewed in the light of the population growth in Tung Chung West and actual traffic of the Tung Chung Line in future.

Other Railway Facilities

If the Tung Chung West Extension is implemented, the consultant estimates that new trains would need to be purchased. The existing depot of the Tung Chung Line could be used for the maintenance and stabling of these additional trains.

Separately, PlanD and CEDD are considering reclamation in Tung Chung East as a way to expand the new town under the ongoing "Tung Chung New Town Extension Study", alongside with the possibility of adding a Tung Chung East Station in the reclamation site. The consultant believes that the relevant proposal may involve modifications to the existing alignment of the Tung Chung Line. A detailed investigation should be conducted with MTRCL to establish the feasibility of this scheme in future to avoid affecting the daily operation of the Tung Chung Line.

Key Consultation Points

(a) Apart from the vicinities of Yat Tung Estate, low-density development sprawls across most parts of Tung Chung West. Do you think that the Tung Chung West Extension should tie in with the new town extension plan to improve the cost-effectiveness of the railway project? Why?

(b) A large number of bus routes are available in Tung Chung West, which provide feeder service to Tung Chung Station of the Tung Chung Line, and travel to and from Tsuen Wan, Ho Man Tin, Tsim Sha Tsui, Hung Hom, Tin Hau, Tseung Kwan O, Tin Shui Wai and Shatin etc. Do you think there is an imminent need to construct the Tung Chung West Extension if Tung Chung West is not further developed? Why?

(c) In general, under what circumstances would you support the implementation of the Tung Chung West Extension? Why?

Kwu Tung Station

- In early 1998, consultants commissioned by the Government launched the "Planning and Development Study on North East New Territories" to identify sites of new development areas, with a view to accommodating the rapid population growth in Hong Kong. As it was considered, amongst other development factors, that Kwu Tung North is adjacent to the Lok Ma Chau Spur Line which was under planning at that time and thus can be easily connected to the railway network, the site was selected as a prioritised new development area.
- Later in 1999, the Government decided to implement the Lok Ma Chau Spur Line which runs through Kwu Tung. Construction works of the Lok Ma Chau Spur Line commenced in late 2002 and were completed in 2007.
- Due to slowdown of the population growth and housing demand, the Government temporarily shelved the proposal of the Kwu Tung North New Development Area (KTN NDA) in 2003.
- In 2007, the "Hong Kong 2030: Planning Vision and Strategy" reviewed the need for new development areas in the New Territories, and recommended proceeding with the NDA proposal to address long-term housing demand and provide more employment opportunities.
- In order to reinitiate the planning of the new development area, PlanD and CEDD conducted the "North East New Territories New Development Areas Planning and Engineering Study" in 2008 to review the relevant recommendations on land development. It is necessary for us to reconsider the idea of adding the Kwu Tung Station in the light of the latest planning status of the new development area.

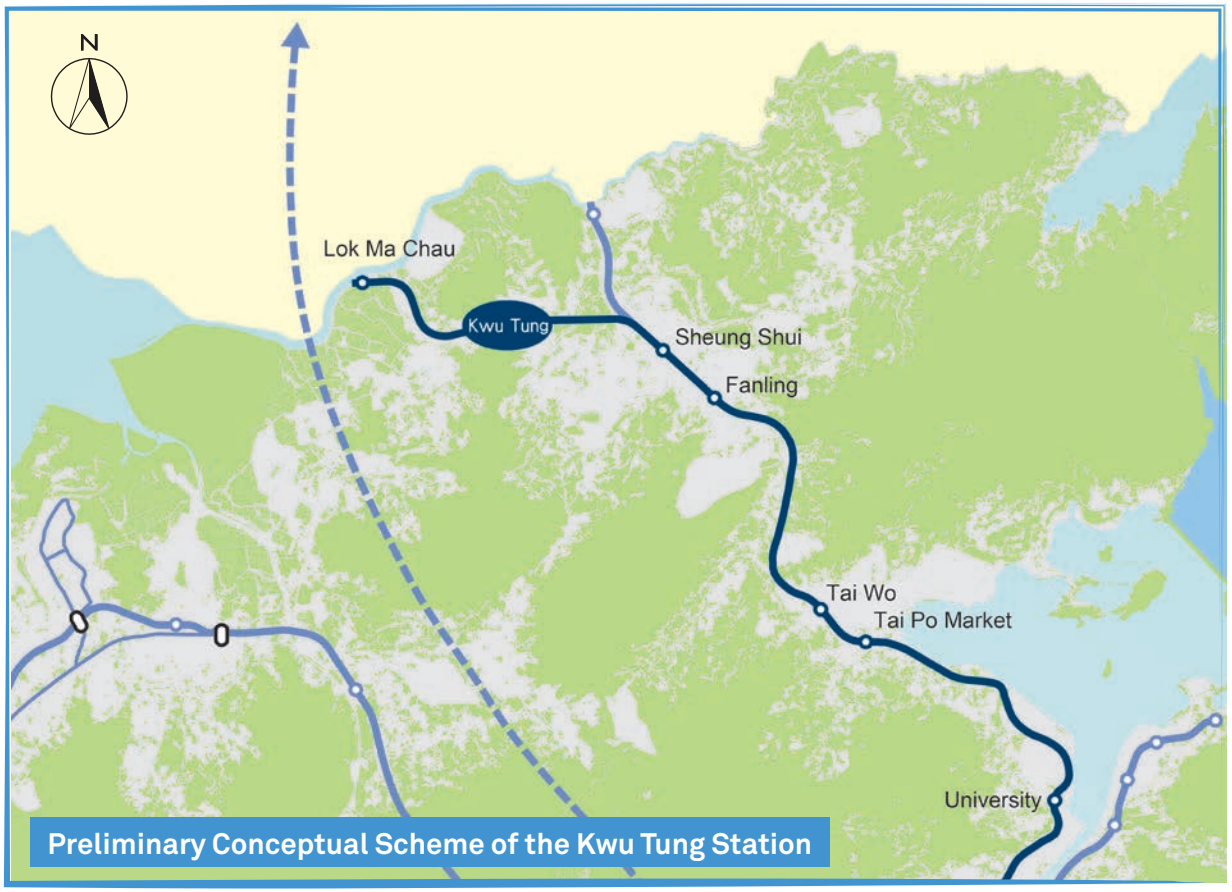
Functions and Planning Considerations

- It has been the long-standing government policy, as well as the aspiration of the general public, to better integrate transport and urban planning. In the Stage 1 public engagement exercise, many commentators suggested that future railway projects should be closely coordinated with regional development plans in order to effectively serve residents' transport needs whilst increasing the potential for land development.
- When planning for the aforesaid KTN NDA, we aim to take advantage of the railway network to increase the accessibility of Kwu Tung North, and locate more intensive development near the railway stations to provide greater convenience to most residents in using railway service.
- In view of the public aspirations and development needs, the ongoing "North East New Territories New Development Areas Planning and Engineering Study" has reviewed the development blueprint of the KTN NDA. In the early stage of the study, the proposed site of the KTN NDA covers an area of approximately 450 hectares which had a population of only about 4,500 residents. The majority of the area in Kwu Tung North involved mixed land uses, such as small-scale residential developments, village settlements, agricultural lands, open storages etc. The existing road-based transport modes are sufficient to support the current transport demand in the region.

- According to the Recommended Outline Development Plan published in 2012, the KTN NDA was preliminarily assumed to accommodate a population of approximately 81,900 and provide about 35,400 employment opportunities to increase housing supply and facilitate more effective use of infrastructures. However, the consultant of that study is currently reviewing the comments received from the Stage 3 public engagement to refine the proposal. As such, the above projections may be subject to further adjustments.
- If the KTN NDA is implemented, it might be necessary to add a Kwu Tung Station on the Lok Ma Chau Spur Line for the residential and employment population in the region.

Preliminary Conceptual Scheme of the Railway Proposal

The proposed Kwu Tung Station is located between Lok Ma Chau Station of the Lok Ma Chau Spur Line and Sheung Shui Station of the East Rail Line. Provisions have been made near Kwu Tung along the Lok Ma Chau Spur Line for the construction of an underground railway station.



Preliminary Conceptual Scheme of the Kwu Tung Station

At present, the journey time between Lok Ma Chau Station and Sheung Shui Station is around 12 minutes; if the Kwu Tung Station is added, trains will need to stop at one more intermediate station and the overall journey time would be slightly lengthened.

As the Hung Hom to Admiralty Section of the Shatin to Central Link is scheduled for completion in 2020, the East Rail Line will be extended to the HKCEC and Admiralty to form the North South Corridor without the need for an interchange. The consultant considers that passengers boarding at Kwu Tung Station will mainly travel to and from the urban area via the North South Corridor. It is estimated that the section from Tai Wai Station to Kowloon Tong Station will be the busiest.

Impacts generated on the North South Corridor by the Kwu Tung Station

Forcast usage of the section from Tai Wai Station to Kowloon Tong Station of the North South Corridor during morning peak hours in 2031			
Scenario	One-direction passenger capacity estimated by the consultant (pax/hour)	One-direction traffic estimated by the consultant (pax/hour)	Average train loading
With Kwu Tung Station	Approximately 80,000	Approximately 54,000	Approximately 68%
Without Kwu Tung Station		Approximately 51,000	Approximately 64%

In the Stage 1 public engagement exercise, the Northern Link was put forward by the consultant, which included an option of connecting Kam Sheung Road Station of the West Rail Line and the KTN NDA.

Kwu Tung Station and the Northern Link

If the above option of Northern Link is implemented, the consultant considers that the Kwu Tung Station might be added to the existing Lok Ma Chau Spur Line at the same time. This would enable passenger interchange between the two railway lines, and achieve better synergy through facilitating more effective east-west movement for residents of the New Territories.

By then, some passengers may prefer to use the Northern Link and East West Corridor to travel to and from the urban area, rather than using the North South Corridor. The consultant suggests that it may be necessary to reassess the impacts on the North South Corridor induced by the Kwu Tung Station in view of the actual needs.

Other Railway Facilities

The consultant preliminarily assesses that the addition of the Kwu Tung Station would have minor impacts on railway operation. The existing railway depot should be sufficient to address the daily operation needs.

Key Consultation Points

(a) Do you agree that the Government should plan the Kwu Tung Station in tandem with the KTN NDA to satisfy the local transport demand?

(b) Adding an intermediate station along an existing railway line may increase the overall journey time. In your opinion, what conditions should be considered when new intermediate stations are added? Why?

(c) In general, under what circumstances would you support the implementation of the Kwu Tung Station? Why?

Public Engagement

We look forward to receiving the views of the community on the Stage 2 study findings and local enhancement schemes. Please send us your views through the channels below on or before 20 May 2013.

Website:	www.ourfuturerailway.hk
Email:	enquiry@ourfuturerailway.hk
Phone:	3922 9777
Fax:	3922 9713
Post:	Railway Development Office, Highways Department 1/F, Ho Man Tin Government Offices, 88 Chung Hau Street, Ho Man Tin, Kowloon Please state “Our Future Railway” on the envelope.

We also organise a series of roving exhibitions and public forums. For details, please visit our website or call 3922 9777 from 9am to 5pm, Monday to Friday (except public holidays) for enquiry.

Contact Us

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