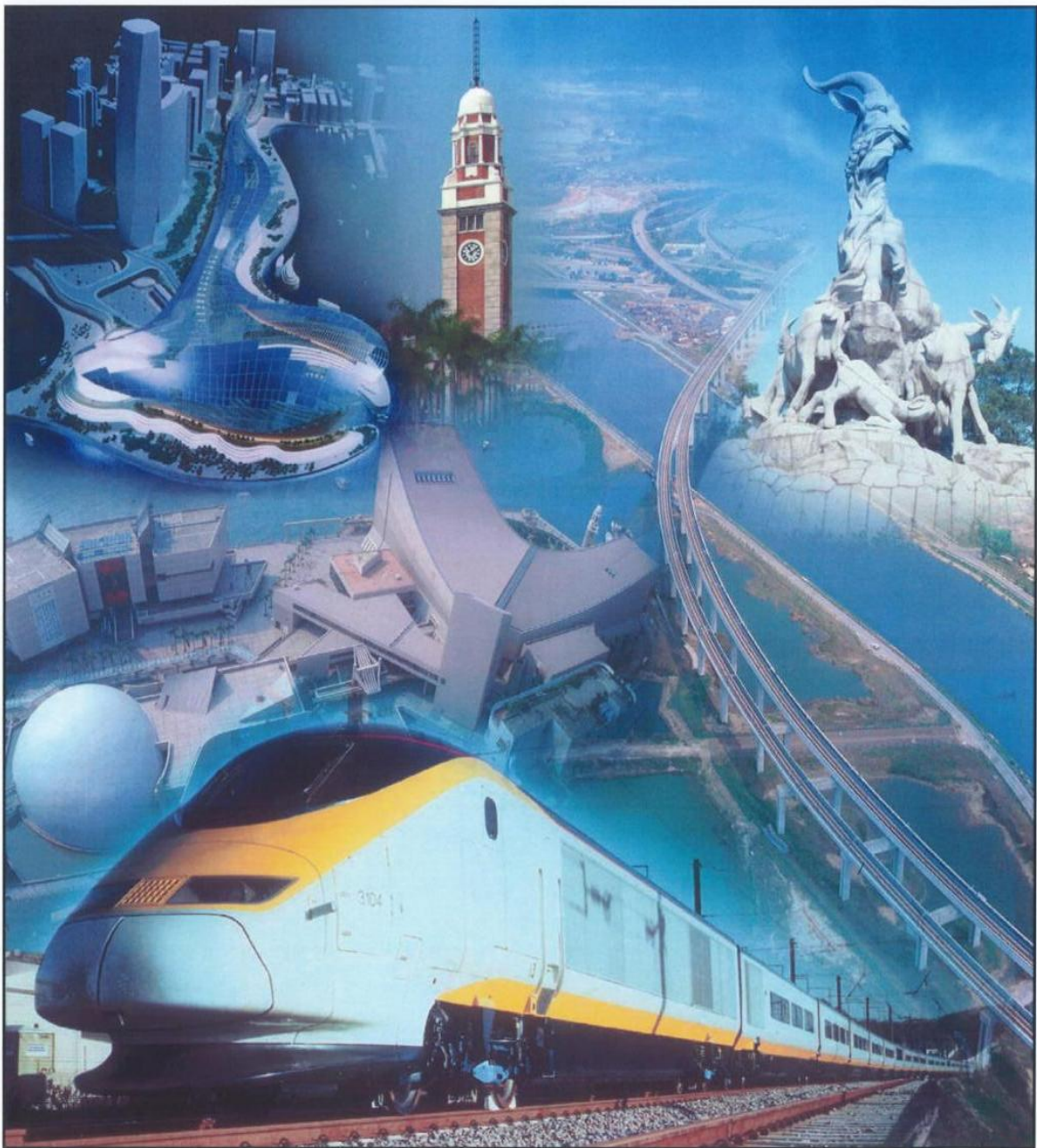


**HONG KONG SECTION OF  
GUANGZHOU-SHENZHEN-HONG KONG  
EXPRESS RAIL LINK  
PROJECT PROFILE  
APRIL 2008**



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## **FIGURES**

Figure 1	Alignment Plan
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## **1 BASIC INFORMATION**

### **1.1 PROJECT TITLE**

Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

### **1.2 PURPOSE AND NATURE OF THE PROJECT**

The Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (hereinafter, XRL or the Project) will connect West Kowloon Terminus to the Mainland section of XRL at Hongmian Dao, southwest of Lok Ma Chau Terminus. The XRL will provide cross-boundary services between stations at Hong Kong, Futian, Longhua (New Shenzhen Station), Humen, Shibi (New Guangzhou Station) and other major Mainland cities.

### **1.3 NAME OF THE PROJECT PROPONENT**

MTR Corporation Limited

### **1.4 LOCATION AND SCALE OF PROJECT AND HISTORY OF THE SITE**

#### **General**

The XRL will comprise a new underground terminus in West Kowloon. The XRL alignment is entirely underground and is routed northwards through urban Kowloon and extending into the New Territories. It passes beneath Sham Shui Po, Shek Kip Mei, Shek Kong, Ngau Tam Mei, and Mai Po to the boundary crossing point at Huanggang, west of the Lok Ma Chau Terminus. There are no intermediate stations.

The XRL tunnel from West Kowloon to the boundary crossing point at Huanggang has a total length of approximately 26 km. The approximate alignment is shown in Figure 1 and 2. The tunnel is located deep underground and its profile is given in Figure 3.

An underground emergency rescue station will be located at the east of Shek Kong, with underground depot facilities to support stabling requirements as well as basic maintenance and emergency repairs to the XRL infrastructure.

Ventilation shafts and/or adits will be located along the alignment to satisfy the tunnel ventilation requirements. The ventilation shafts will also act as emergency access points in the future for emergency services.

#### **Terminus**

The West Kowloon Terminus (WKT) is an underground terminus located immediately north of the proposed West Kowloon Cultural District between the Airport Express Kowloon Station and the future West Kowloon Station. The terminus will partly extend into the underground area of the West Kowloon Cultural

District. The proposed multi-level terminus consists of platform level, arrival/departure hall level, a concourse, and entrance hall.

### **Proposed Alignment and Method of Construction**

The XRL passes beneath Jordan Road and Hoi Wang Road from WKT by cut and cover tunnel construction to a construction shaft located adjacent to Cherry Street.

The tunnel continues northwards and passes beneath Tai Kok Tsui, Sham Shui Po, Shek Kip Mei, Shing Mun Country Park and Tai Mo Shan Country Park towards Shek Kong. This section will be constructed using tunnel boring machines (TBM) in soft ground and drill and blast techniques in rock strata. Ventilation buildings/shafts and emergency access points are provided at Tai Kok Tsui, So Uk and Shek Yam. Adits will be constructed to connect the ventilation buildings in So Uk and Shek Yam with the main tunnels.

An emergency rescue station will be constructed by cut and cover method at Shek Kong. The tunnel proceeds northwards and passes beneath the Lam Tsuen Country Park towards Ngau Tam Mei. The section between Tai Mo Shan and Lam Tsuen Country Park will be constructed using TBM techniques, while the section beneath Lam Tsuen Country Park will be constructed using drill and blast techniques. Ventilation buildings and emergency access points will be located at Lui Kung Tin, Tsat Sing Kong, Ngau Tam Mei and Wo Shang Wai

North of Ngau Tam Mei, the alignment will pass beneath San Tin and Mai Po wetlands to connect to the Mainland reception/access shaft located north of the Shenzhen River. For the cross-boundary section, TBMs will be used for tunnel construction beneath the wetlands. A ventilation building will be constructed at Wo Shang Wai.

## **1.5 NUMBER AND TYPES OF DESIGNATED PROJECTS**

The proposed Project is a single project and is classified as designated project under Schedule 2, Part I, Categories A.2, A.4, A.7 and Q.1 of the Environmental Impact Assessment Ordinance.

## **1.6 NAME AND TELEPHONE NUMBER OF CONTACT PERSONS**

Dr. Glenn Frommer  
MTR Corporation Limited  
Head of Sustainability Development  
Tel: 2163 6357

## **2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

### **2.1 PROJECT PLANNING AND IMPLEMENTATION**

The whole project will be planned and implemented by MTR Corporation Limited in-house departments together with external consultants and contractors.

### **2.2 PROJECT PROGRAMME**

The construction works is tentatively scheduled to commence in the 4<sup>th</sup> quarter of 2009 and complete by 2015.

### **2.3 PROJECT INTERFACE**

Major project committed that will interface with XRL included the West Kowloon Cultural District.

## **3 POSSIBLE IMPACTS ON THE ENVIRONMENT**

### **3.1 POTENTIAL ENVIRONMENTAL IMPACTS: CONSTRUCTION PHASE**

The following sections describe the potential environmental impacts during the construction phase, which will be alleviated by effective and pragmatic mitigation measures designed according to the assessed levels of impact.

#### **3.1.1 Air Quality**

Potential air quality impacts may arise from fugitive dust emissions generated by construction activities such as excavation, cutting, filling, stockpiling, construction vehicle movements, as well as demolition works.

#### **3.1.2 Noise**

Airborne noise will be generated during cut and cover activities, piling, pile construction, column construction, spoil transportation etc.

Ground borne noise will be generated from TBM tunnelling. As insignificant impacts were noted from the TBM operations during the construction of Kowloon Southern Link, it is anticipated that the use of TBM for the XRL construction will not have significant impact on nearby receivers. Assessment methodology will be used accordingly.

### **3.1.3 Water Quality**

Water quality impacts may arise due to the following potential sources during the construction of the Project:

- Construction site run-off and drainage from works areas;
- General construction activities;
- Sewage effluent produced by on-site workers; and
- Groundwater extracted during excavation and tunnel construction.

### **3.1.4 Waste Management**

The key waste management implication will be excavated materials generated from the excavation of tunnels, terminus and rescue station. Environmental impacts arising will be assessed, and opportunities for re-use and potential disposal outlets will be studied.

### **3.1.5 Hazard**

Explosives will be required for the drill and blast tunnel sections. The use of explosive will be controlled by the Mines Division of the Civil Engineering and Development Department. A risk assessment will be conducted to assess the risk due to the transport and storage of explosives.

### **3.1.6 Ecology**

The southern section of the XRL alignment is located deep under the highly urbanized Kowloon and Tsuen Wan area and ecological impact arising from the construction of this section is not expected.

Underground tunnelling methods, such as TBM and drill & blast, will be utilized for tunnel sections underneath the ecological sensitive areas such as Tai Mo Shan Country Park, Lam Tsuen Country Park and Mai Po wetlands. The use of TBM techniques has proved to be effective in avoiding adverse ecological impacts to above ground areas for instance in Long Valley during the construction phase of the Lok Ma Cha Spur Line tunnel.

Potential ecological impacts may arise due to the above ground works at Shek Kong, Lui Kung Tin, Pat Heung, Ngau Tam Mei and Wo Shang Wai. However, since most of the area and its surroundings are highly disturbed, it is not expected to present any unacceptable ecological impacts.

### **3.1.7 Fisheries Impact**

The potential fisheries impact of the XRL is likely to be non-existent. Direct impact on the fishponds identified at Wo Shang Wai, is not expected. Fisheries impact may arise if construction activities result in pollution of watercourses. Such impacts can be avoided by appropriate construction site management protocols.

### **3.1.8 Historical and Cultural Heritage Impacts**

Potential disturbance to historical buildings may exist. However, as the tunnel is located deep underground and the historical buildings are not close to the alignment, adverse impact to these buildings is not anticipated.

The Pat Heung Sheung Tsuen archaeological site is in close proximity to the proposed rescue station and a detailed assessment will be undertaken during the EIA.

### **3.1.9 Land Contamination**

The XRL alignment will pass through potentially contaminated sites, including open storage areas, workshops and petrol filling stations. Appropriate investigation and assessment will be conducted during the EIA stage to determine if contaminated soil or groundwater will be encountered during construction. With the implementation of remediation actions, no residual land contamination impact is anticipated.

### **3.1.10 Landscape and Visual Impact**

The construction of above ground structures will result in potential impacts to the nearby landscape resources and the adjacent existing and future landscape characters. Visual impacts will also arise from disturbance to the existing vegetation.

## **3.2 POTENTIAL ENVIRONMENTAL IMPACTS: OPERATIONAL PHASE**

### **3.2.1 Air Quality**

The trains of XRL will be electrically operated. Air quality impacts are not expected.

### **3.2.2 Noise**

The operation of XRL will have the potential to give rise to ground borne noise affecting sensitive receivers at West Kowloon, Shek Kong, Ngau Tam Mei and Mai Po. The operational noise impacts will be assessed during the EIA and mitigation measures will be determined. Noise impact of potential stationary noise sources includes ventilation shafts, ventilation buildings, and plant items from stations will also be evaluated. With the implementation of mitigation measures, no adverse impacts are expected. Assessment methodologies will be adopted appropriately.

### **3.2.3 Water Quality**

Tunnel effluents will be collected and discharged to the nearest public sewer. Sewage and wastewater effluent generated from WKT will also be discharged to the nearby public sewer.

### **3.2.4 Waste Management**

Municipal waste, including litter, foodstuffs, plastics, wood, office waste and cleaning materials will be generated during the operation of the proposed railway.

### **3.2.5 Hazard**

The XRL alignment is not within consultation zones of any Potential Hazardous Installations.

### **3.2.6 Ecology**

Though less severe, the potential impacts to habitat types will be similar to those identified for the construction phase and will be assessed in details during the EIA process. Appropriate mitigation measures will be developed to minimize the potential adverse impacts.

### **3.2.7 Fisheries Impact**

Fisheries impact during operation is not expected.

### **3.2.8 Historical and Cultural Heritage Impacts**

No historical and cultural heritage impacts are expected during the operation of the proposed railway.

### **3.2.9 Land Contamination**

No land contamination impacts are expected during the operation of the proposed railway.

### **3.2.10 Landscape and Visual**

Potential landscape impacts will result from the permanent loss of landscape and trees arising from the Project, in the construction phase. As XRL is mostly underground, its overall visual impact is small. The above ground structures such as the station, ventilation shafts and buildings, may result in some impact on the physical landscape and visual amenity of the surrounding areas and mitigation will be assessed. Appropriate public consultation will continue as needed.



## **4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

### **4.1 EXISTING AND PLANNED SENSITIVE RECEIVERS**

The major sensitive receivers and sensitive parts of the natural environment, which might be affected by the Project, are listed below. The list of sensitive receivers is not exhaustive and will be reviewed during the EIA stage.

Table 4.1 Major Sensitive Receivers

<b>Types</b>	<b>Sensitive Receivers</b>
Residential Developments	The Arch, The Waterfront, Central Park, Residential blocks along Man Cheong Street, Charming Garden, Park Avenue, Hoi Fu Court, June Garden, Metro Harbour View, Lei Cheng Uk Estate, So Uk Estate, Ning Fung Court, Shek Yam East Estate, Lui Kung Tin, Mun Hau Tsai, Cheung Uk Tsuen, Sheung Tsuen San Tsuen, Tsz Tong Tsuen, Wang Toi Shan Lo Uk Tsuen, Tsat Sing Kong Tsuen, Yau Tam Mei Tsuen, Royal Palms, and proposed residential development at Wo Shang Wai.
Educational Institutions	Yau Ma Ti Catholic Primary School, HKMA David Li Kwok Po College, St. Francis Xavier's College, Po Leung Kuk Vicwood K. T. Chong Sixth Form College, Fresh Fish Traders' School, San Wui Commercial Society (Kowloon) School, Good Counsel Primary School, Tsung Tsin Middle School, and Buddhist Tai Hung College.
Health Care Facilities	Cheung Sha Wan Jockey Club Clinic, and Evergreen International Hong Kong Association Home for Aged.
Place of Worship	Tai Kok Tsui Church of Foursquare Gospel, Mo Tai Temple, Sam Tai Tsz Temple, Sham Shui Po Baptist Church, SKH Kei Oi Church, St. Lawrence Catholic Church, and Pat Heung Temple.
Performance Venues	Future performance venues in West Kowloon Cultural District.
Water Courses	Inshore waters of Victoria Harbour, nullah and streams flowing into Kam Tin River, and ponds at Wo Shang Wai, and Mai Po.
Areas of conservation value	Tai Lam Country Park, Lam Tseun Country Park, Mai Po wetlands, agricultural land and grasslands at Wo Shang Wai, and Mai Po Inner Deep Bay Ramsar Site.
Site of Cultural Heritage	Graded historic buildings at No. 117 – 125 Nam Cheong Street, Mo Tai Temple, Sam Tai Tsz Temple, Pat Heung Temple, and Pat Heung Sheung Tsuen archaeological site.

## **5 ENVIRONMENTAL PROTECTION MEASURES AND IMPLICATIONS**

### **5.1 POTENTIAL MEASURES TO MINIMIZE ENVIRONMENTAL IMPACTS**

Potential measures are outlined below to minimise environmental impacts. These measures will be further reviewed during the EIA process.

#### **5.1.1 Construction Phase**

##### **Air Quality**

Good site practices and relevant dust control measures set out in the Air Pollution Control (Construction Dust) Regulations will be implemented to control the dust impacts on the nearby sensitive receivers. With the mitigation measures in place, it is expected that the construction dust impact will be minimized to acceptable levels.

##### **Noise**

General site practices including the location of noisy machinery away from sensitive receivers; the use of silencers, mufflers and acoustic shields on plant and equipment; regular maintenance of plant and equipment; and the reduction in number of machines used at any one time, will be adopted as needed to control noise impacts.

##### **Water Quality**

Water quality impact mitigation measures will be implemented in accordance with the Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN 1/94) such as drainage facilities to control site runoff, wheel washing facilities, proper toilet facilities and comprehensive waste management procedures.

##### **Waste Management**

Mitigation measures to control waste will include adoption of good housekeeping practices, sorting and segregation of wastes for reuse and disposal. Potential disposal outlets and opportunities for re-use for the excavated materials will be studied in details.

##### **Hazard**

Potential hazards associated with the use of explosives for the drill and blast tunnels will be assessed and taken into consideration. Necessary mitigation measures will be proposed during EIA process.

### **Ecology**

Ecological impacts will be avoided as far as practicable. Appropriate mitigation measures will be developed and implemented to mitigate the construction phase impacts.

### **Fisheries**

Appropriate construction site management protocols will be adopted to avoid impact on fisheries due to pollution of watercourses.

### **Historical and Cultural Heritage**

Detail assessment will be carried out during the EIA process to assess the potential cultural heritage impact and the mitigation measures required.

### **Land Contamination**

The extent of special handling and treatment required prior to disposal will be based on results of appropriate investigation available and assessment conducted during the EIA stage. Licensed waste collectors will collect and transport contaminated materials for disposal, and vehicles will be suitably covered to limit dust emissions, and truck bodies and tailgates sealed to prevent any spillage.

### **Landscape and Visual Impact**

Landscape and visual impact mitigation measures such as the following may be recommended for the construction stage subject to the detailed assessment under the EIA:

- i) Avoidance of impacts on adjacent landscape by minimising temporary works areas;
- ii) Avoidance of impacts on existing mature trees and transplantation will only be recommended where unavoidable. Tree felling will be undertaken as a last resort;
- iii) Temporary re-provision of open space for any public open spaces affected by construction works;
- iv) Control of night-time lighting; and
- v) Erection of decorative screen hoarding.

### **5.1.2 Operational Phase**

#### **Noise**

Mitigation of ground borne noise will be by means of appropriate trackform design. For fixed plant noise, adequate noise control treatment such as silencers, acoustic louvres, and quiet plant will be adopted.

#### **Ecology**

Appropriate mitigation measures will be developed during the EIA process and implemented to mitigate the potential ecological impact due to XRL operation.

#### **Landscape and Visual**

Landscape and visual mitigation measures such as, tree transplanting, re-instatement of excavated areas, sensitive architectural design, buffer planting, and screening planting, will be implemented to minimize visual impacts of the above ground structures of XRL.

### **5.2 POTENTIAL SEVERITY, DISTRIBUTION AND DURATION OF ENVIRONMENTAL EFFECTS**

It is anticipated that the construction works will commence in 4<sup>th</sup> quarter of 2009 with completion targeted for 2015. Air, noise, water, waste, ecology, and landscape and visual impacts will be issues for the duration of construction. It is expected that proven means of mitigation in most instances will be sufficient to mitigate adverse environmental impacts.

### **5.3 ENVIRONMENTAL BENEFITS**

The XRL will provide high speed, safe, comfortable and high quality transport services between Hong Kong and major cities of Mainland China. Hong Kong will be better integrated into Pearl River Delta and the wider region of Mainland China.

The XRL offers an alternative transportation choice for the public. It encourages people to use an environmentally friendly public transport and thus benefits the environment by reducing air and noise pollution problem and other associated deleterious effects generated by automobile usage.

## **6 USE OF PREVIOUSLY APPROVED EIA REPORTS**

No previously approved report exists for the project. However, reference may be made within the study area from the following reports:

- i) EIA Reports of KCRC LMC Spur Line (EIA-071/2001)
- ii) EIA Report of Kowloon Southern Link (EIA-098/2004)

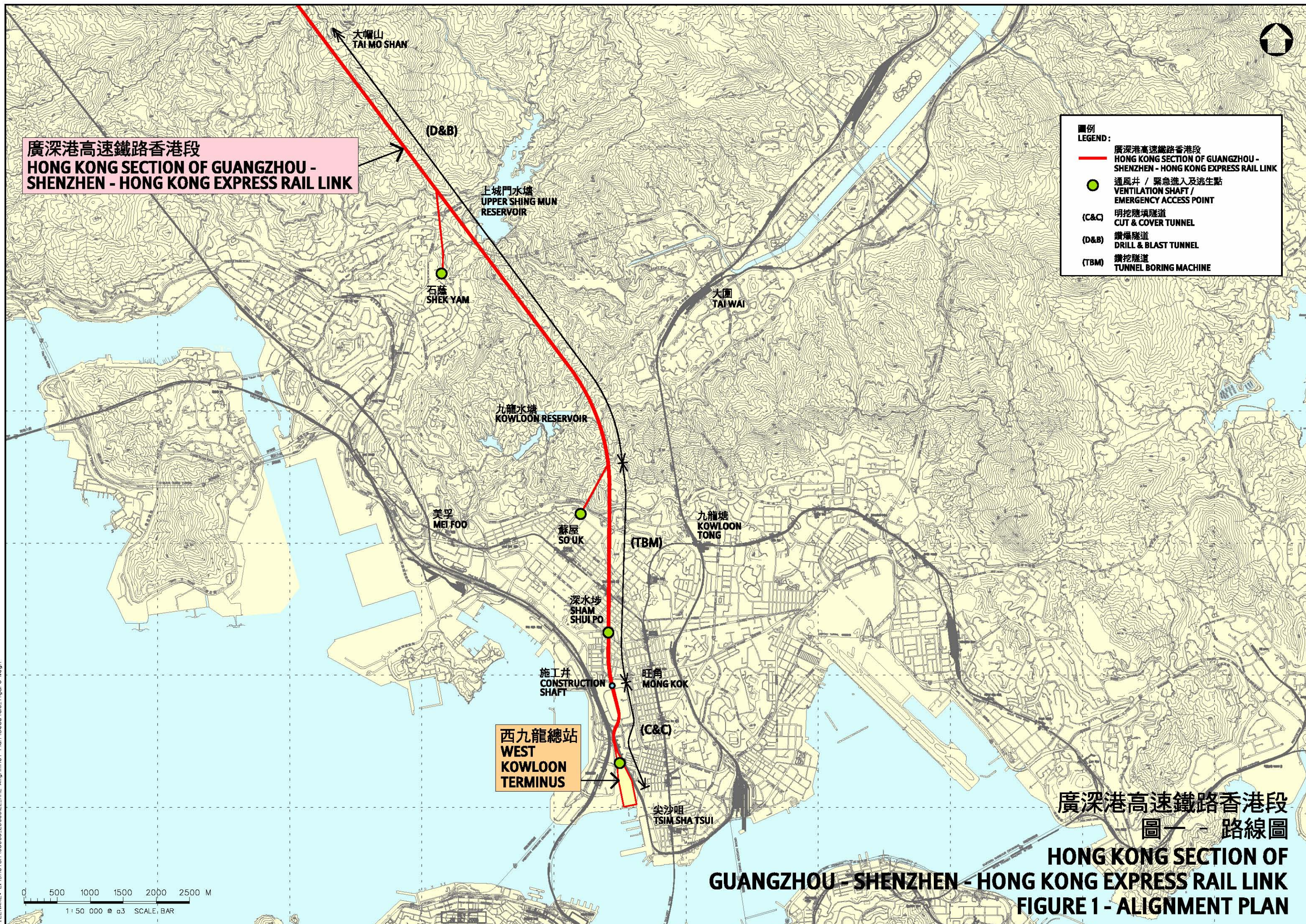
Reference will also be made to approved EIA reports on the EIAO register for other developments that will potentially interface with the Project.



廣深港高速鐵路香港段  
HONG KONG SECTION OF GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK

圖例  
LEGEND:

- 廣深港高速鐵路香港段  
HONG KONG SECTION OF GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK
- 通風井 / 緊急進入及逃生點  
VENTILATION SHAFT / EMERGENCY ACCESS POINT
- (C&C) 明挖隨填隧道  
CUT & COVER TUNNEL
- (D&B) 鑽爆隧道  
DRILL & BLAST TUNNEL
- (TBM) 鑽挖隧道  
TUNNEL BORING MACHINE



西九龍總站  
WEST KOWLOON TERMINUS

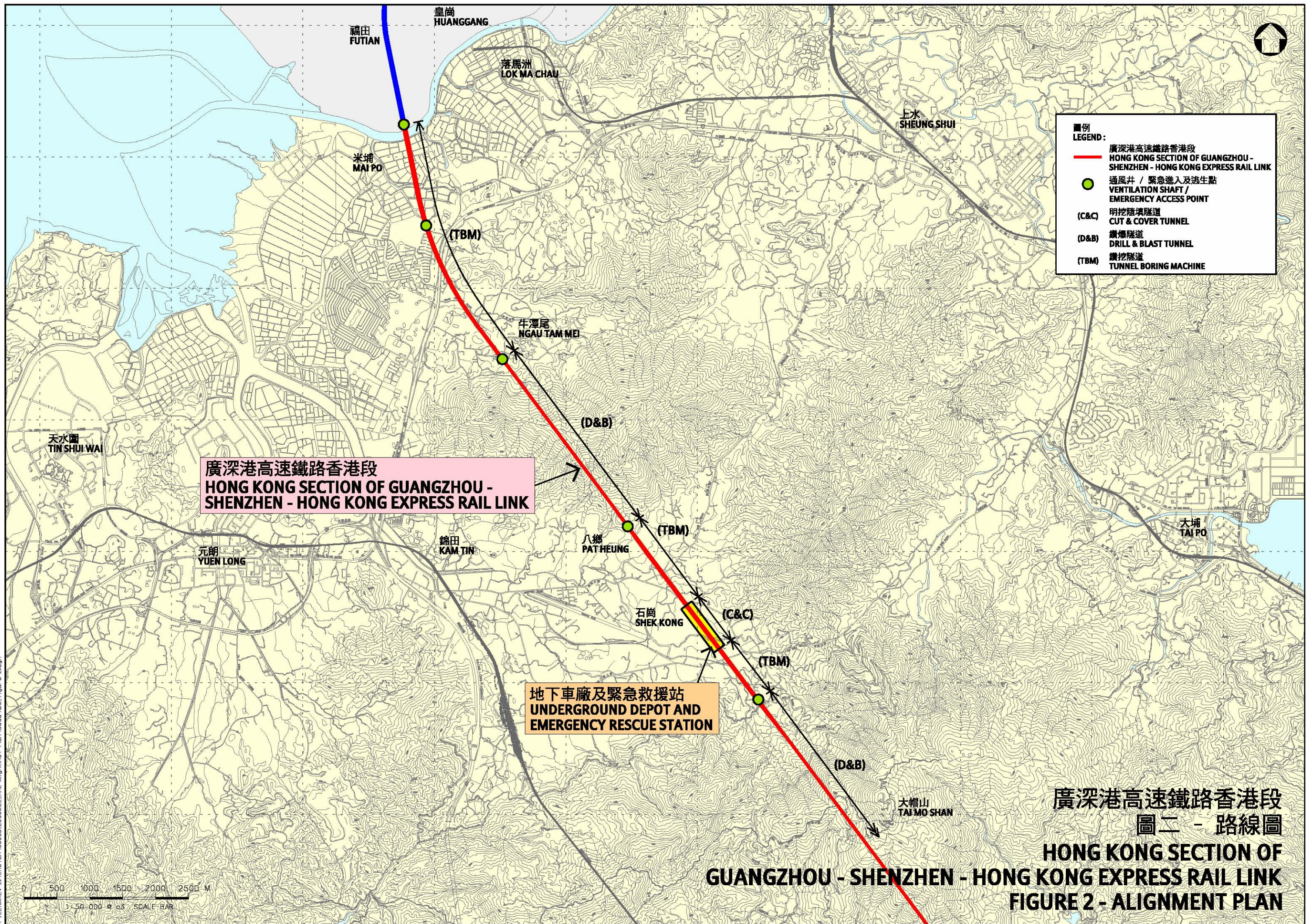
廣深港高速鐵路香港段  
圖一 路線圖

HONG KONG SECTION OF  
GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK  
FIGURE 1 - ALIGNMENT PLAN

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**圖例**  
**LEGEND:**

- 廣深港高速鐵路香港段  
HONG KONG SECTION OF GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK
- 通風井 / 緊急進入及逃生點  
VENTILATION SHAFT / EMERGENCY ACCESS POINT
- (C&C) 明挖隨填隧道  
CUT & COVER TUNNEL
- (D&B) 鑽爆隧道  
DRILL & BLAST TUNNEL
- (TBM) 鑽挖隧道  
TUNNEL BORING MACHINE

**廣深港高速鐵路香港段**  
**HONG KONG SECTION OF GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK**

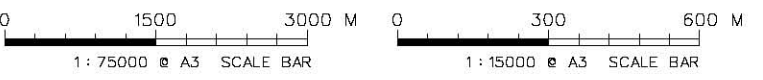
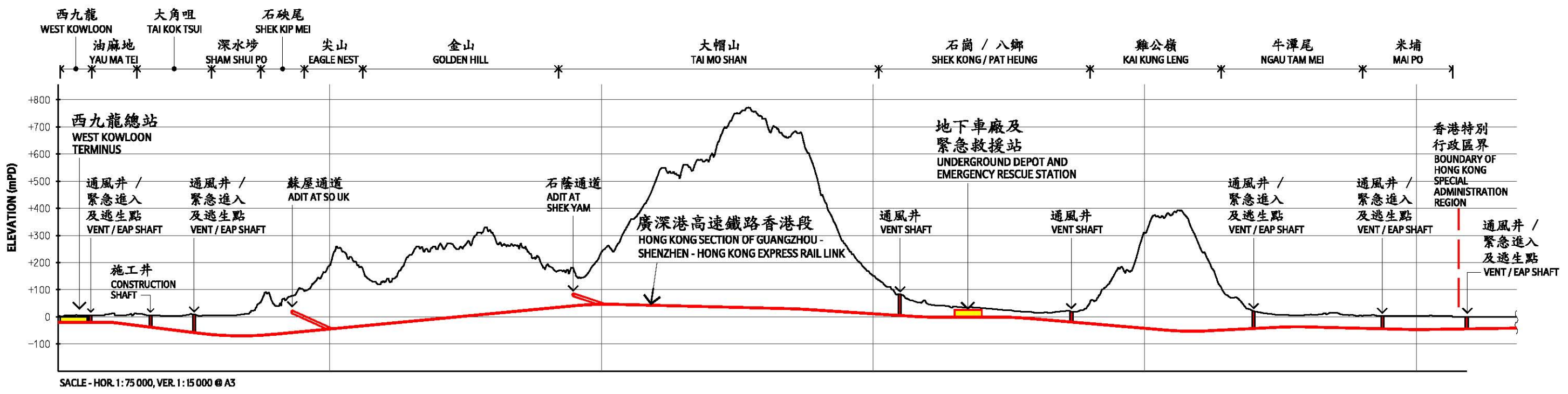
**地下車廠及緊急救援站**  
**UNDERGROUND DEPOT AND EMERGENCY RESCUE STATION**

**廣深港高速鐵路香港段**  
**圖二 - 路線圖**

**HONG KONG SECTION OF GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK**  
**FIGURE 2 - ALIGNMENT PLAN**



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**廣深港高速鐵路香港段**  
**圖三 - 路線縱向剖面圖**  
**HONG KONG SECTION OF**  
**GUANGZHOU - SHENZHEN - HONG KONG EXPRESS RAIL LINK**  
**FIGURE 3 - ALIGNMENT VERTICAL PROFILE**