

The 10 Major Infrastructure Projects

- Cross Boundary Infrastructure

Guangzhou-Shenzhen- HK Express Rail Link

The Guangzhou-Shenzhen-HK Express Rail Link (ERL) is an express rail line connecting HK, Shenzhen and Guangzhou. It aims at providing a fast and convenient railway service linking the three places.

With the ERL, the journey time between HK and Guangzhou will be reduced from about 100 minutes as at present to within an hour. The proposed Mainland section will be connected to the Beijing-Guangzhou Passenger Line and the Hangzhou-Fuzhou-Shenzhen Passenger Line which are part of the national railway system. Hence, through this rail link, HK can be connected directly with major Mainland cities, such as Beijing, Shanghai or Chongqing. Passengers using the ERL can also reach other major cities in the PRD via the Intercity Rapid Rail.

Upon its completion, the ERL will help promote Hong Kong as the gateway to the Pearl River Delta area, further strengthen the economic ties and cooperation between Hong Kong and the Mainland, promote mutual economic prosperity and development, and raise the competitiveness of the region as a whole.

Provision of a common immigration and customs clearance system is provided in terminus on Hong Kong side (West Kowloon).

Present status:

A joint expert group co-led by the Ministry of Railway of the Central Government and the HKSAR Government has been pressing ahead with the advance planning for the ERL, and agreement has been reached regarding the alignment of the Mainland section.

The Mainland section of the ERL will start from Shibi (石壁) in Guangzhou, run through Humen (虎門) in Dongguan and Longhua (龍華) in Shenzhen, and then cross the boundary through Huanggang (皇崗) into Hong Kong. The construction of the Mainland section from Shibi to Longhua has already started, and arrangements will be made to synchronize the construction of the section from Longhua in Shenzhen to the boundary with the project programme of the Hong Kong section. The HKSAR and Shenzhen Municipal Governments are exchanging views on the connection between the Mainland and the Hong Kong sections. The common goal of both sides is to build a rail that can cater for the need of passengers to and from Hong Kong.

For the Hong Kong section, the Executive Council has given green light to its further planning and the Government has invited the Kowloon-Canton Railway Corporation to proceed with further planning work of the project. The 30-km long Hong Kong section of the ERL will have its terminus at West Kowloon.

The 26-km Express Rail Link (XRL) runs from the terminus in West Kowloon to Shenzhen. There will be no intermediate station within the Hong Kong territory. The alignment runs beneath Yau Tsim Mong, Sham Shui Po, Kwai Tsing, Tsuen Wan and Yuen Long Districts. The Express Rail Link will operate entirely in dedicated tunnels.



Total length of
ERL about 26km



北環線和廣深港高速鐵路香港段的線路方案示意圖
ALIGNMENT OF NORTHERN LINK AND HONG KONG SECTION OF THE ERL

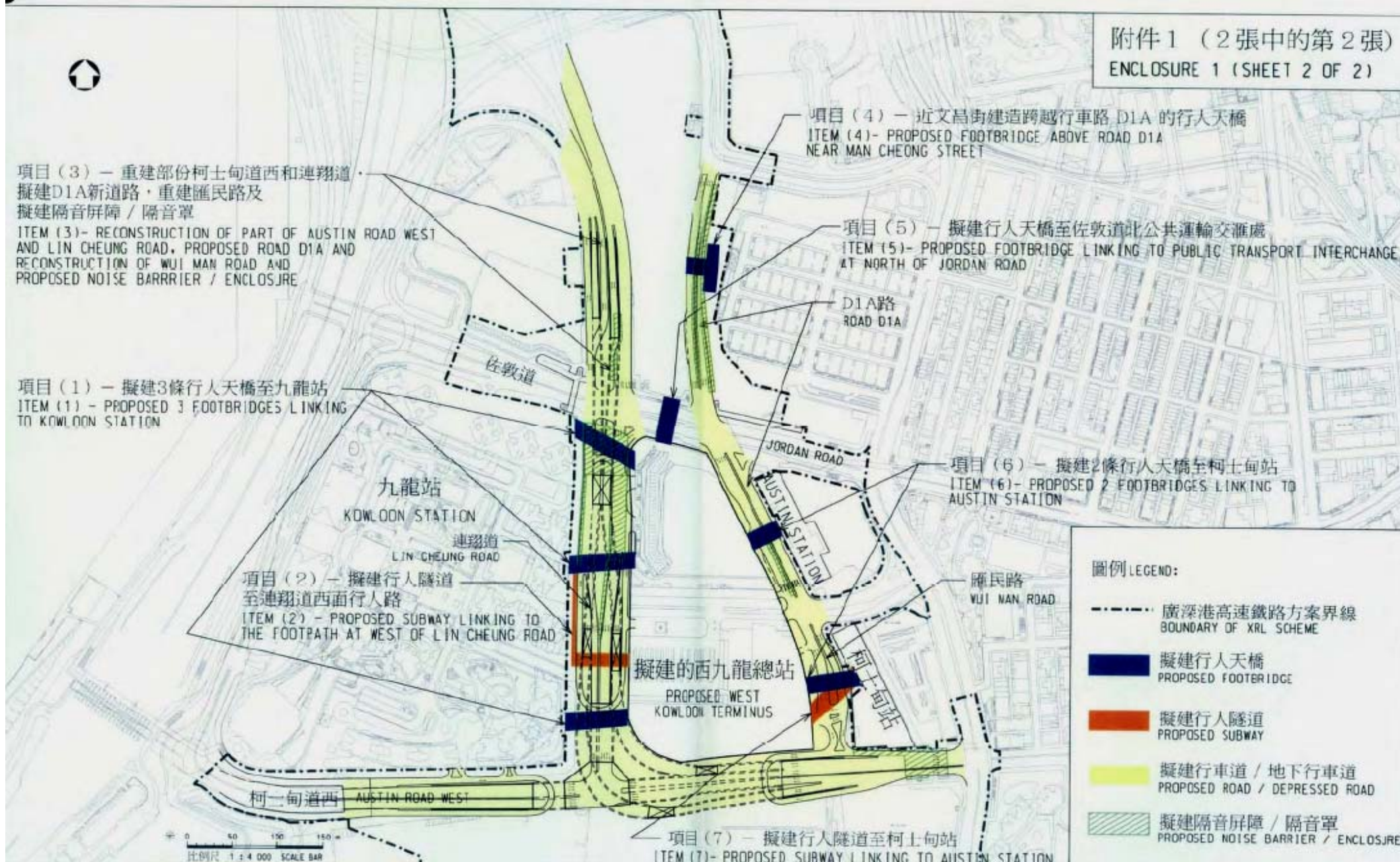
Original scheme



Rail alignment (Construction scheduled between late 2009 to 2015 (HK section))



Rail alignment (updated with the introduction of the Rapid Transit System)



Proposed Terminal of Express Rail in West Kowloon

Proposed Alignment and Method of Construction

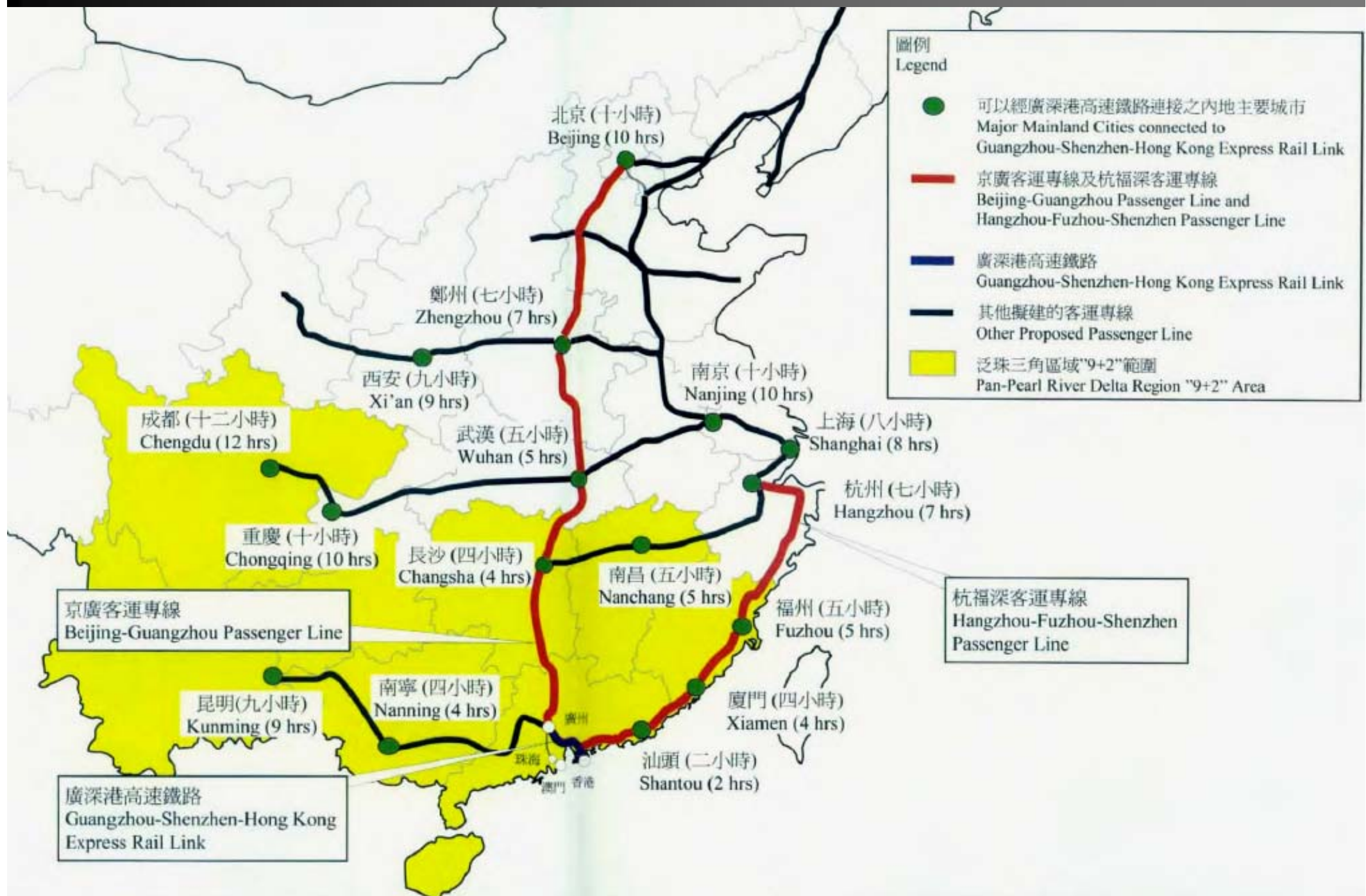
The XRL passes beneath Jordan Road and Hoi Wang Road from WKT by cut and cover tunnel construction to a construction shaft located adjacent to Cherry Street.

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.

China is one of the countries in the world that has a most developed railway system since 1950. In the recent 20 years, the expansion of the railway network is developed in an un-precedent rapid way due to the improvement in overall economy. Every bigger city in China has her own central railway station that can connect to almost everywhere inside China.



Express Rail (High Speed Train Line) network in China (total about 16,000 km)

NORTH-SOUTH DIRECTION		EAST-WEST DIRECTION	
①	BEIJING - SHANGHAI 北京 - 上海 (1300km)	A	TAIYUAN - SHIJIAZHUANG - QINGDAO 太原 - 石家庄 - 青岛 (770km)
②	BEIJING - WUHAN - GUANGZHOU - SHENZHEN 北京 - 武汉 - 广州 - 深圳 (2230km)	B	LANZHOU - ZHENGZHOU - XUZHOU 兰州 - 郑州 - 徐州 (140km)
③	BEIJING - SHENYANG - HARBIN (DALIAN) 北京 - 沈阳 - 哈尔滨 (大连) (1860km)	C	CHENGDU - ZHONGQING - WUHAN - NANJING 成都 - 重庆 - 武汉 - 南京 (1900km)
④	HANGZHOU - NINGBO - FUZHOU - SHENZHEN 杭州 - 宁波 - 福州 - 深圳 (1600km)	D	CHANGSHA - NANCHANG - HANGZHOU 长沙 - 南昌 - 杭州 (880km)

乘飛機: $1 + 3.5 + 1.5 = 6$ 小時?

泛珠三角地區

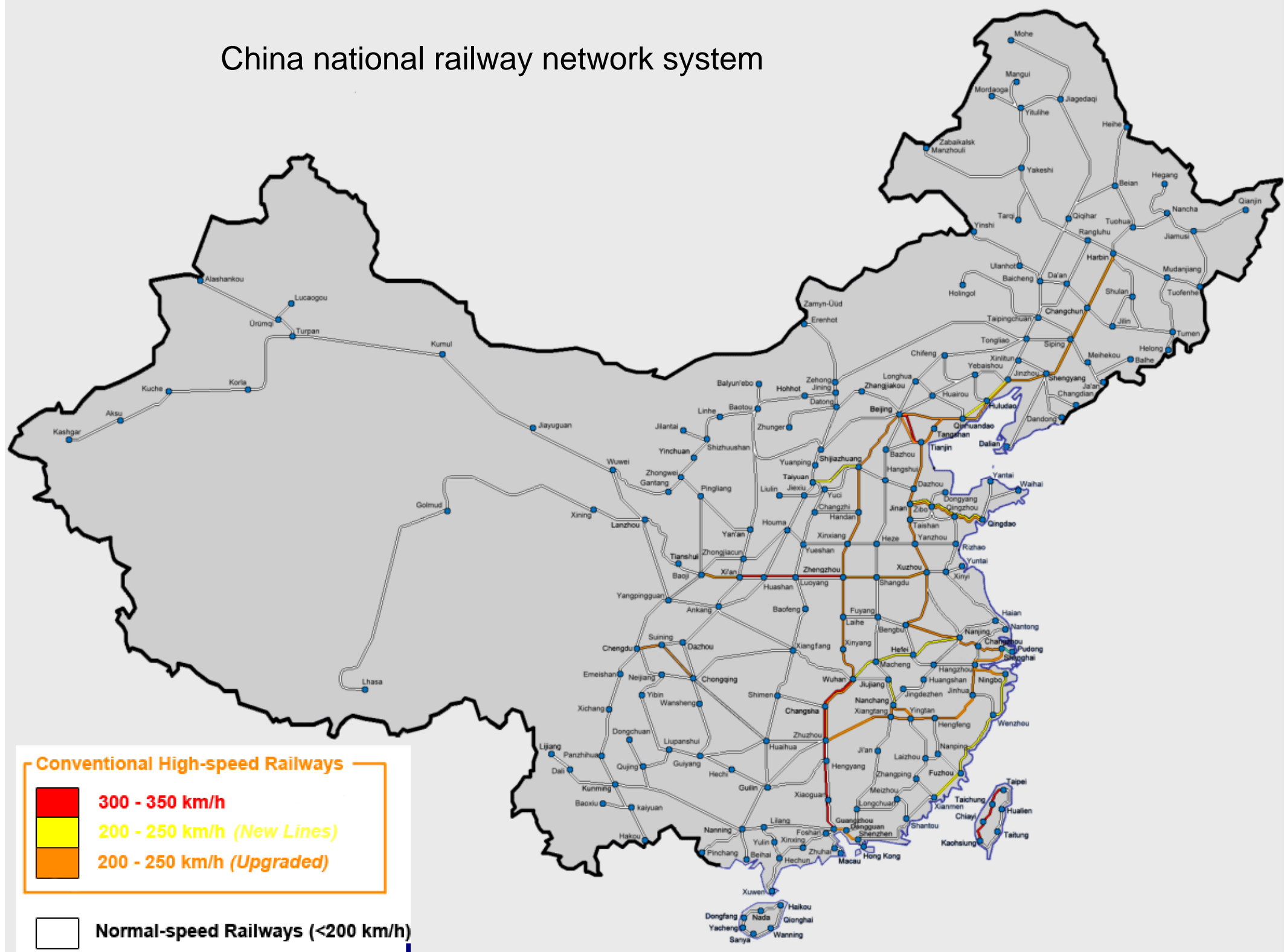
從香港往	路程
北京	10 小時
上海	8 小時
武漢	5 小時
廈門	4 小時
廣州	48 分鐘

廣深港高速鐵路

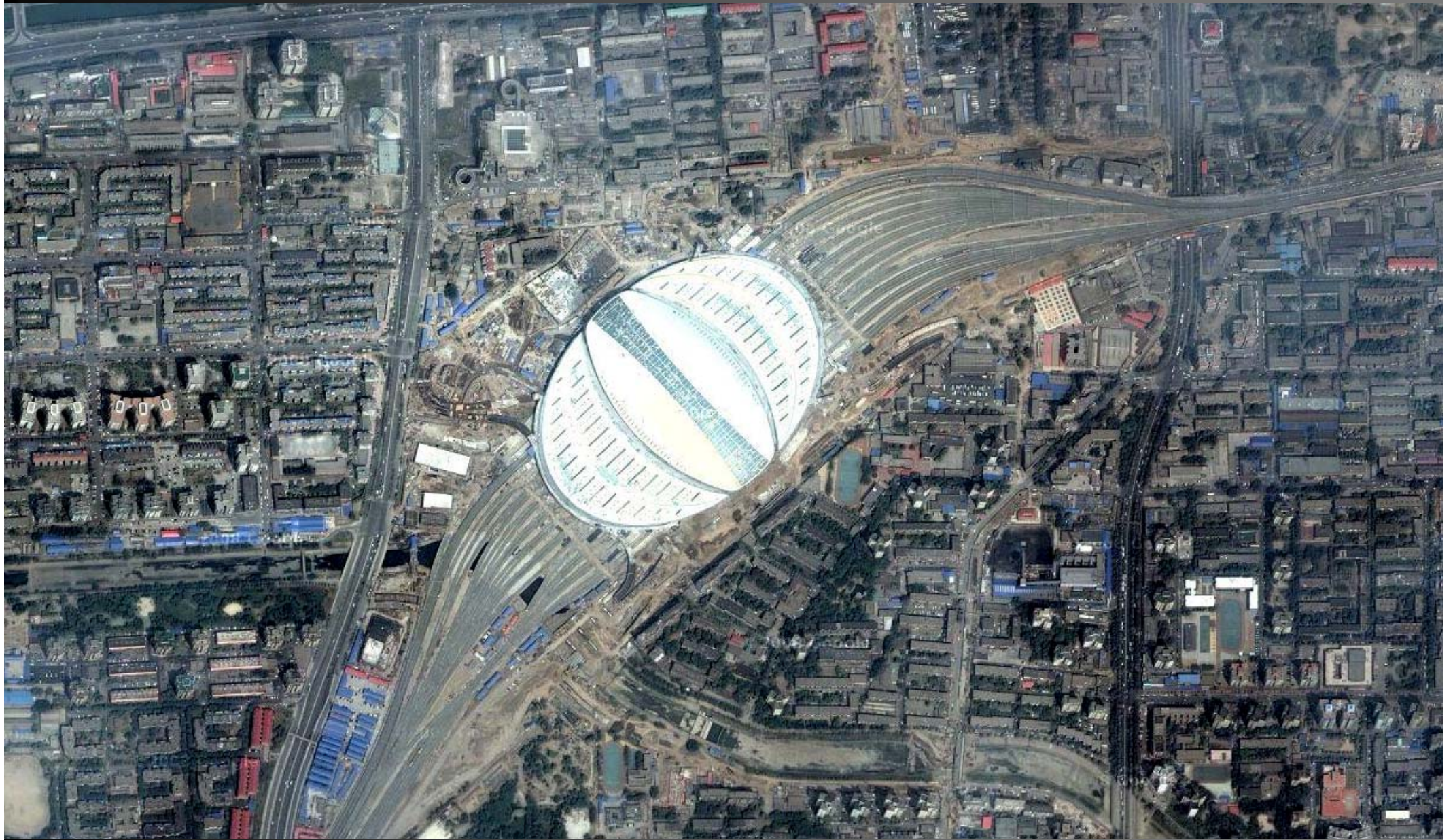
澳門 香港



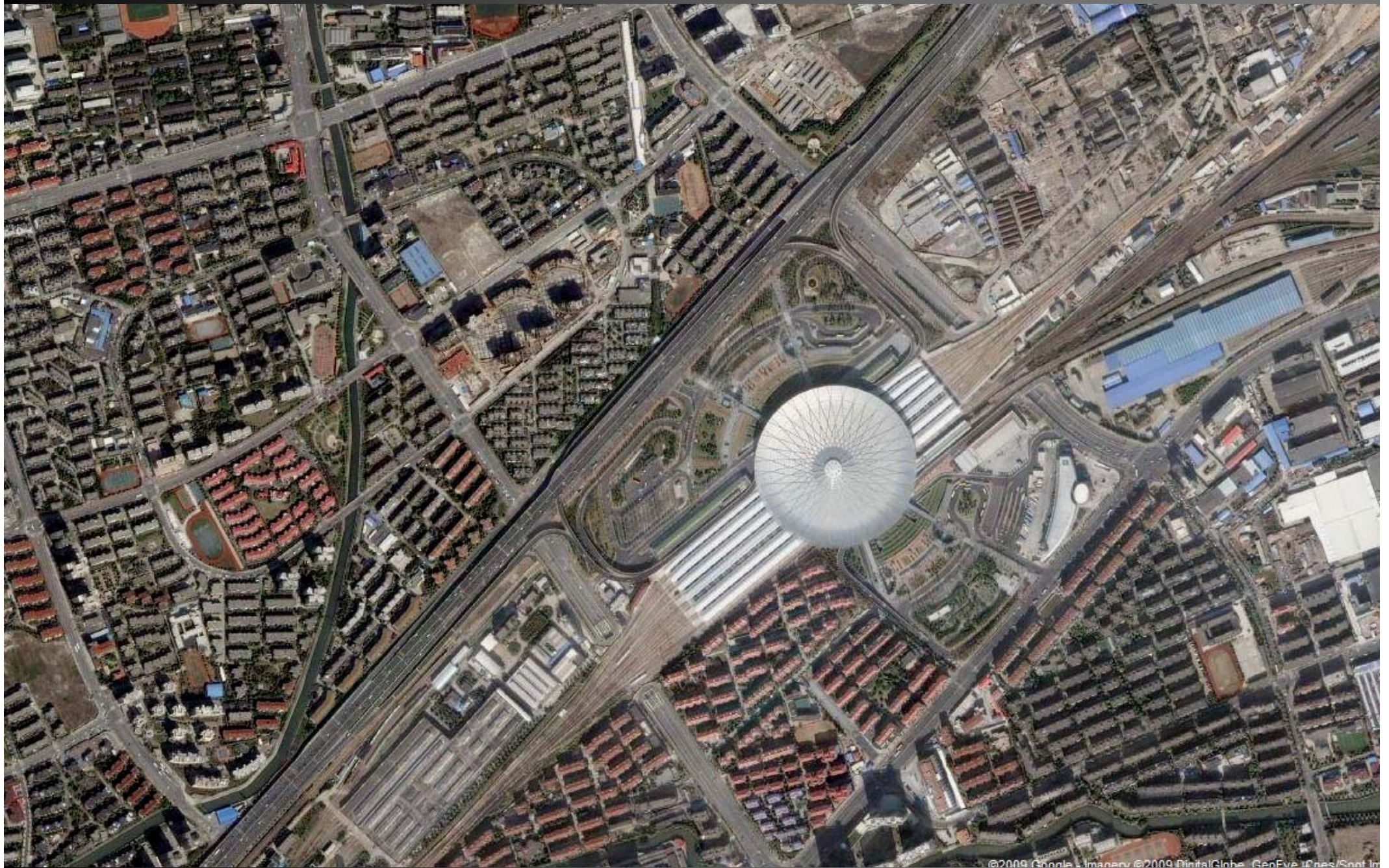
China national railway network system



How much China by now has
done in High Speed Railway?



New Beijing Railway Station



New Shanghai South Railway Station



New Shanghai South
Railway Station Complex





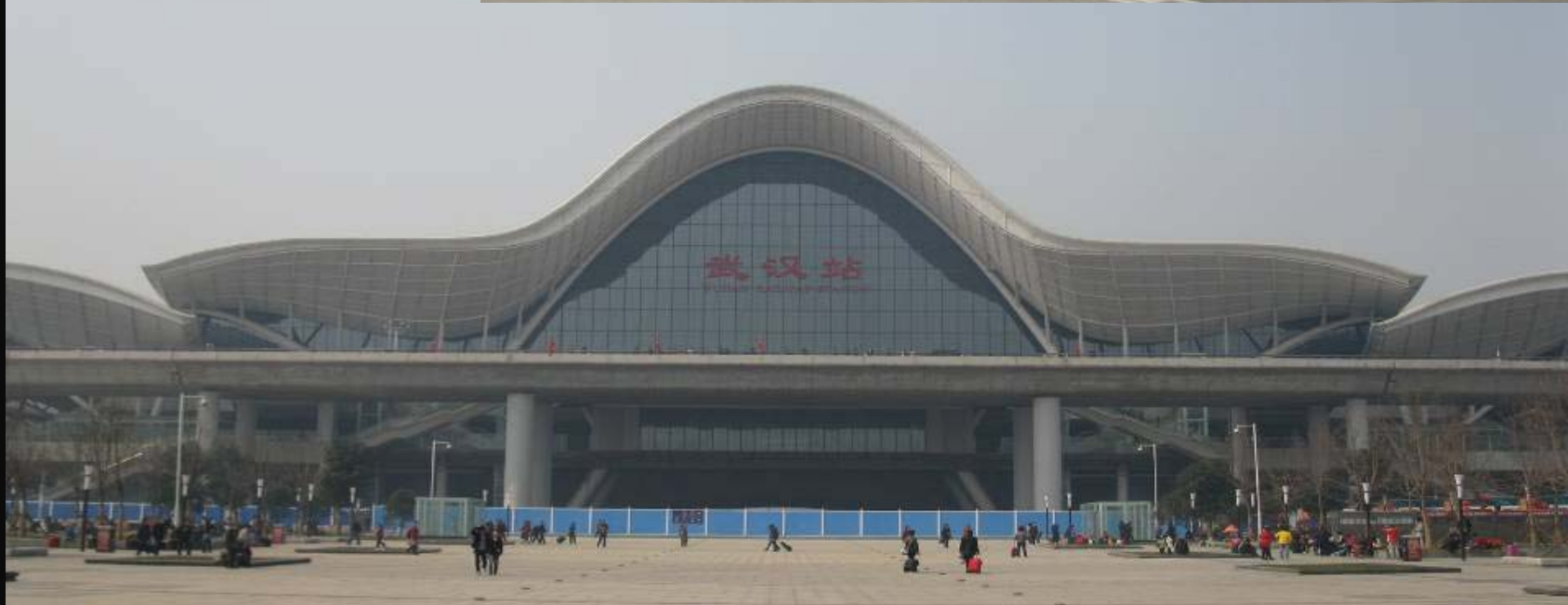
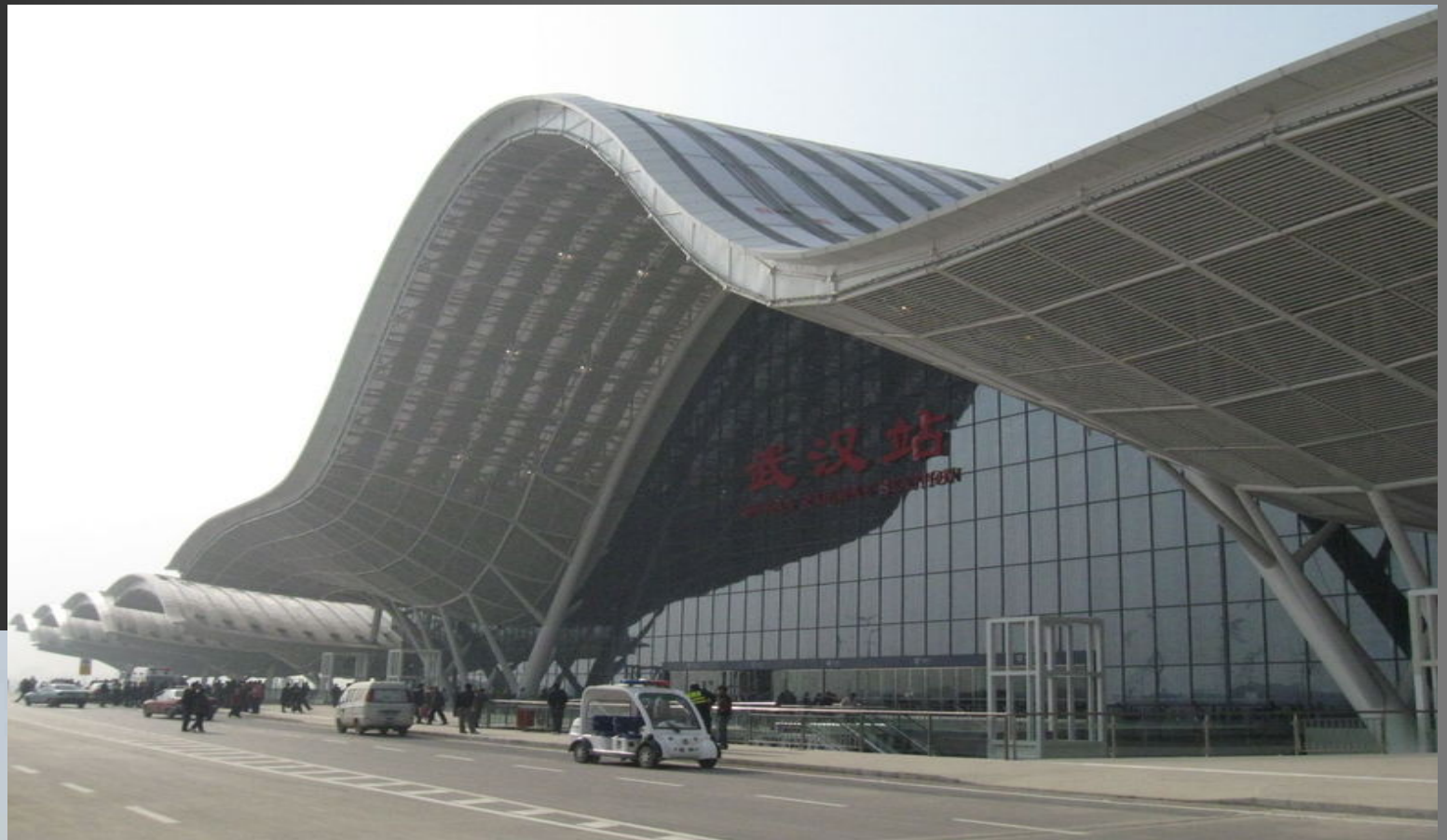


Zuzhou Railway Station Complex



Zuzhou Railway Station Complex

Wuhan Railway Station Complex





The Station Platform



New Hangzhou Station



Railway construction is very active all over China in the recent years. These photos show the final completion of the new Shanghai South Station in 2005.







Tracks leading into the
Guangzhou Station





Tibet Quighai Railway



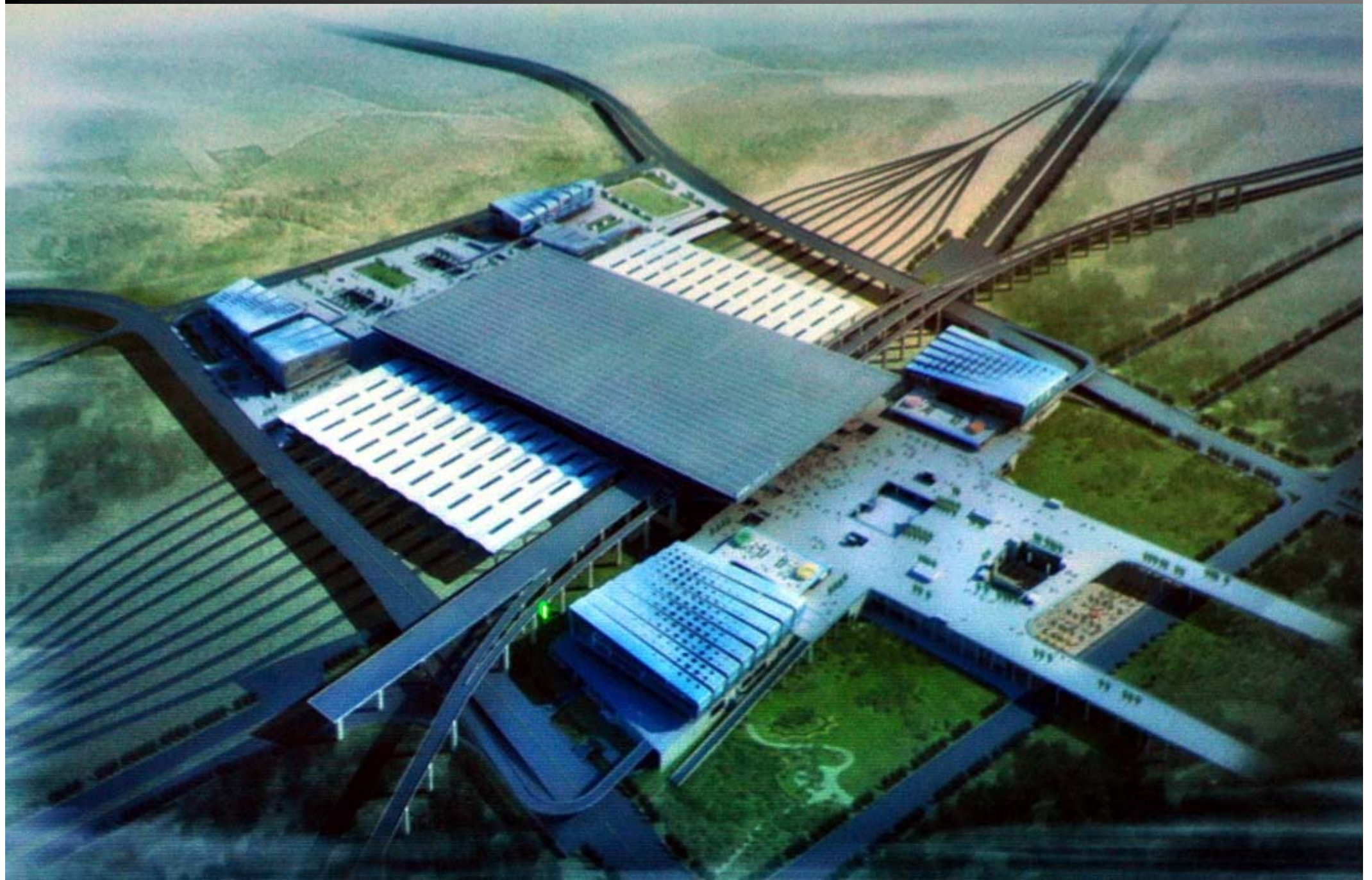


Shenzhen rail and metro system merging with the High Speed Train network





Shenzhen North Station at
Lung Hwa under construction
in late 2009



Shenzhen North Station at Lung Hwa under construction in late 2009

High Speed Rail Guangzhou North Station



Opening of the High Speed Rail Wuhan Station
by the end of December 2010

Alignment and facilities with the Hong Kong section



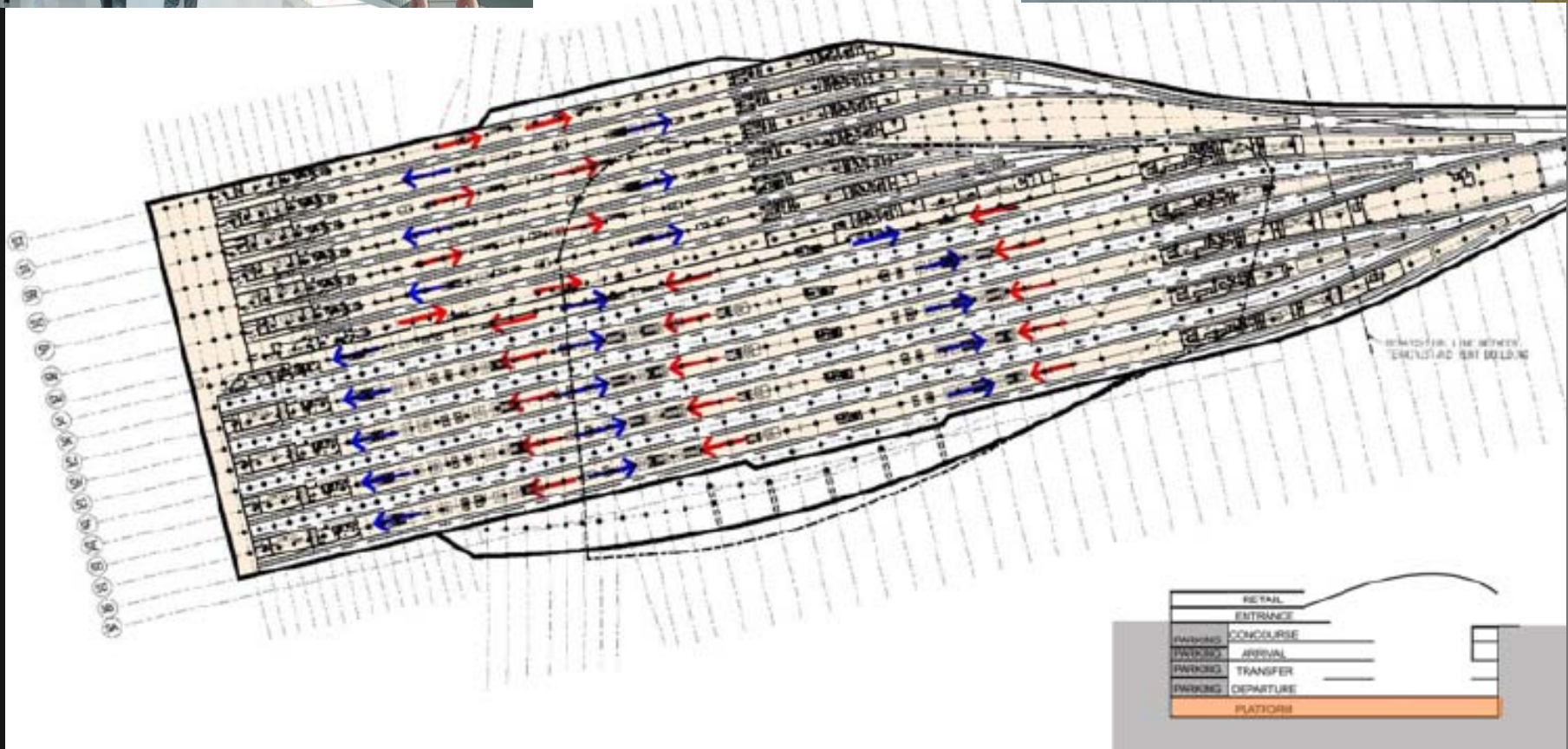


Aerial view of the Express Rail Terminal at West Kowloon

West Kowloon Terminus



- Passenger platform at -25m
- Total 15 station platform (6 for short and 9 for long distance)



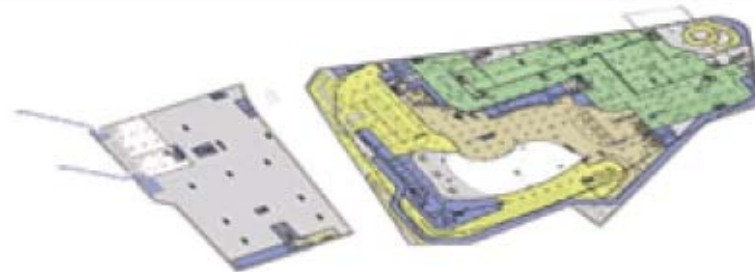
Ground Level (+6.3 mPD)

Station Entrances, Station Trade Area,
Green Area, Link to WKCD, PTI, drop-off



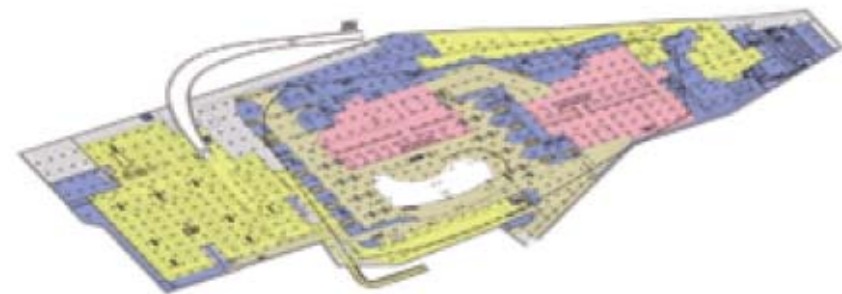
B1 Ticket Hall (+1.4 mPD)

Station Trade Area, Ticket office and
machines, Drop-off, Ticket Gates



B2 Arrival Hall (-5.0 mPD)

Boundary Control Facilities, Car Parks,
Taxi Pick-up, Offices



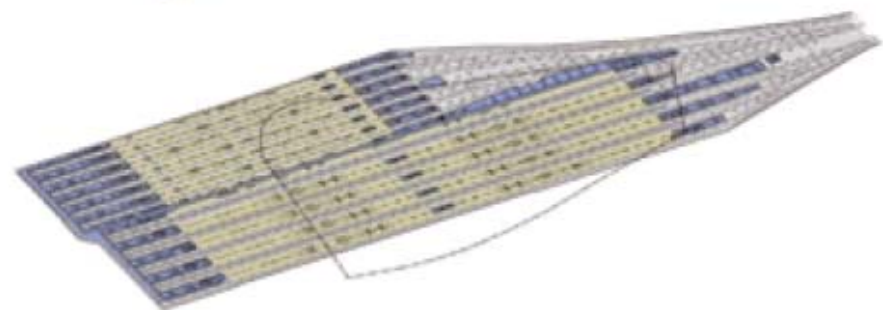
B3 Departure Hall (-11.6 mPD)

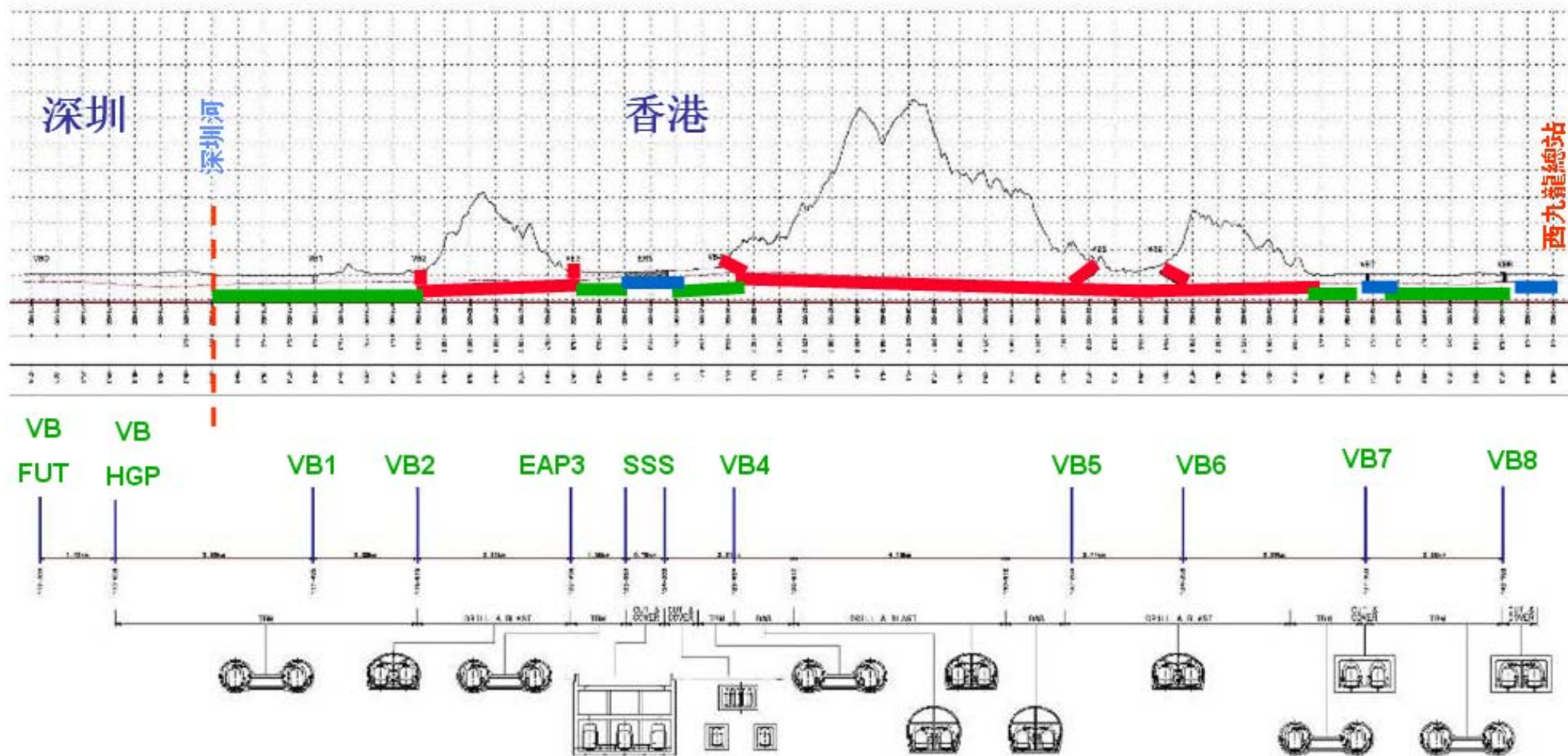
Boundary Control Facilities, Train Waiting Area,
Duty Free shops, Offices, Machine rooms



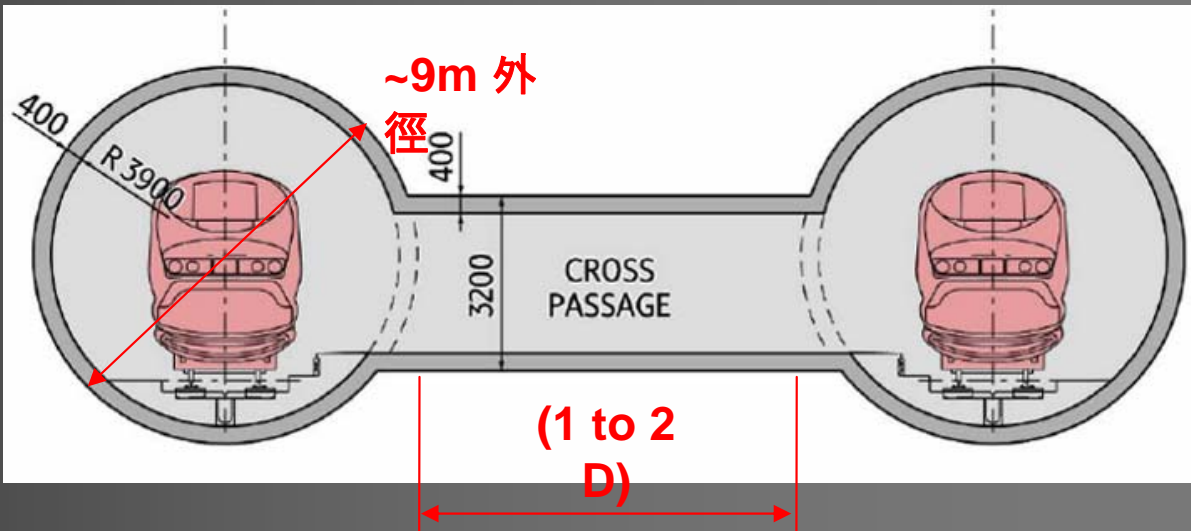
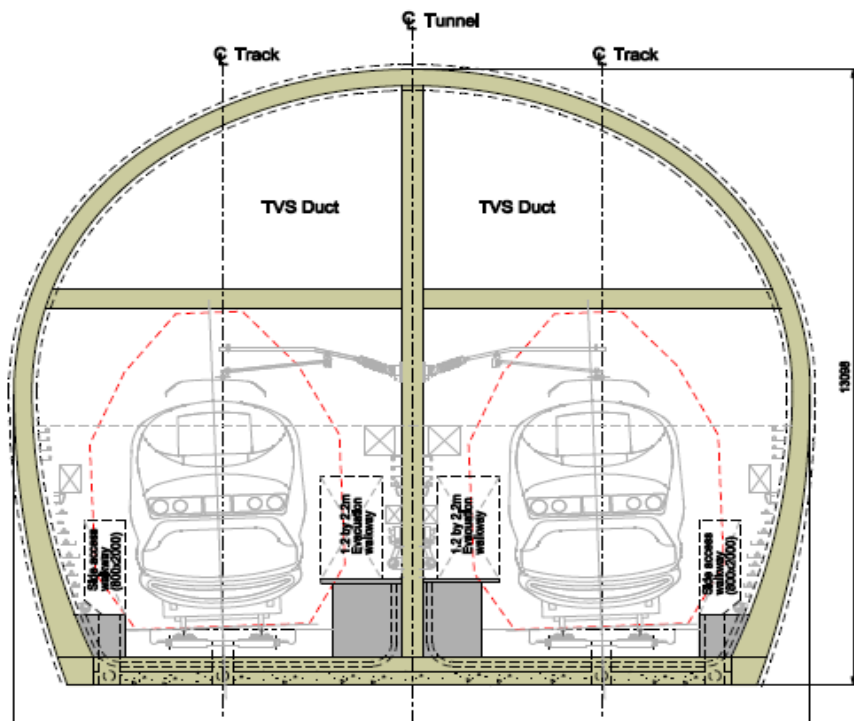
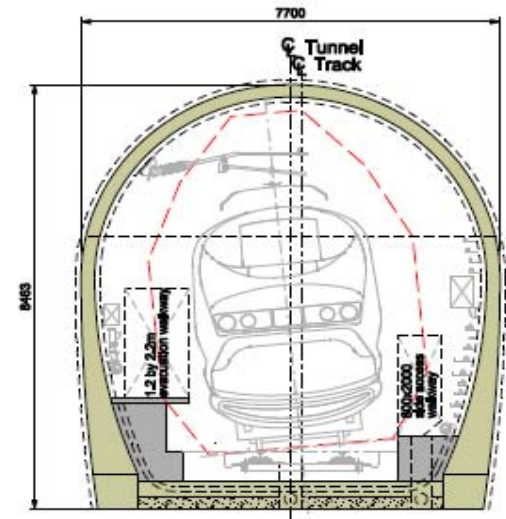
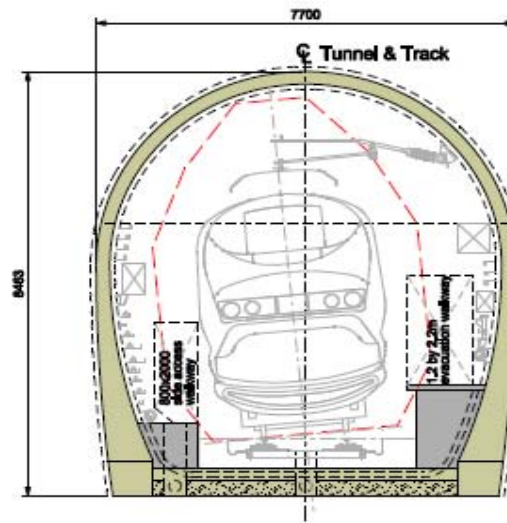
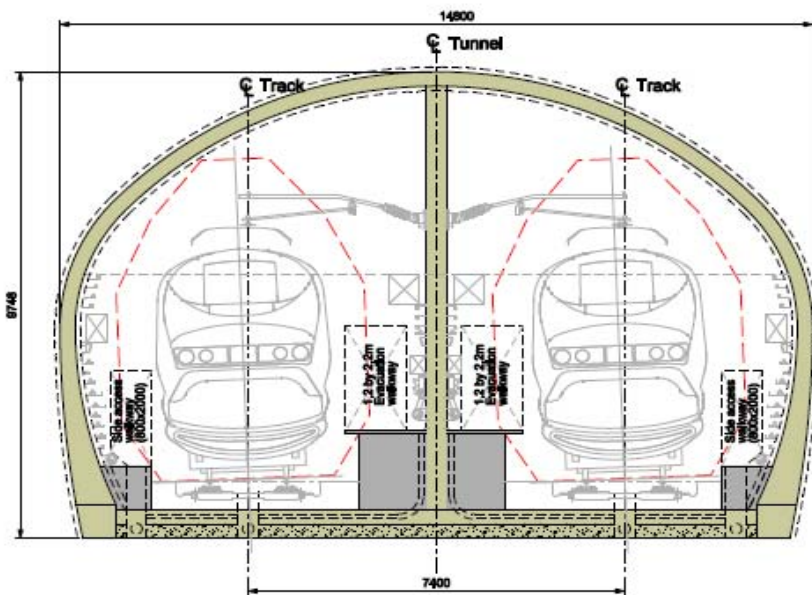
B4 Platforms (-19.3 mPD)

15 Platform Tracks
(6 short haul + 9 long haul)





- TBM 9km
- Drill-and-Blast 15km
- Cut-and-Cover 2km

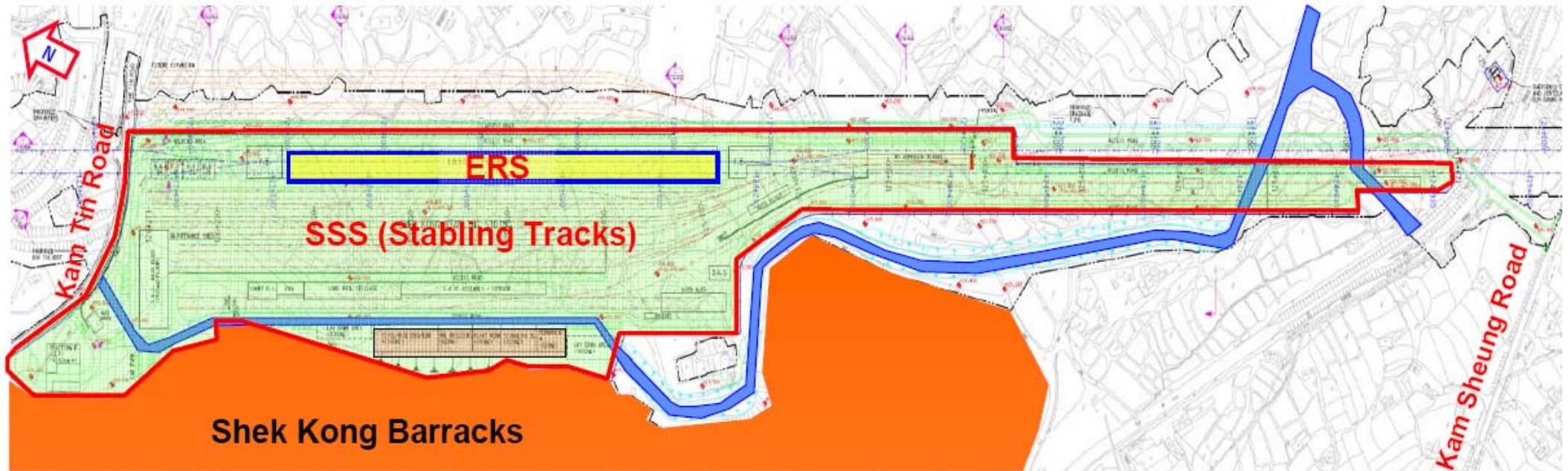


Typical tunnel sections

Cross Boundary section



SSS and ERS - Plan



- Awkward shaped site located next to Shek Kong PLA barracks.
- Main Access off Kam Tin Road, secondary access off Kam Sheung Road.
- Includes Emergency Rescue Siding (ERS), open, deep below ground level.
- SSS approach tracks in cut & cover tunnels
- Land graded to +15 mPD. Cut and fill required with levels varying between +12 to +20 mPD.



Artistic Impression of SSS and ERS*

Artistic Impression of Main Building*



Views of ventilation building and

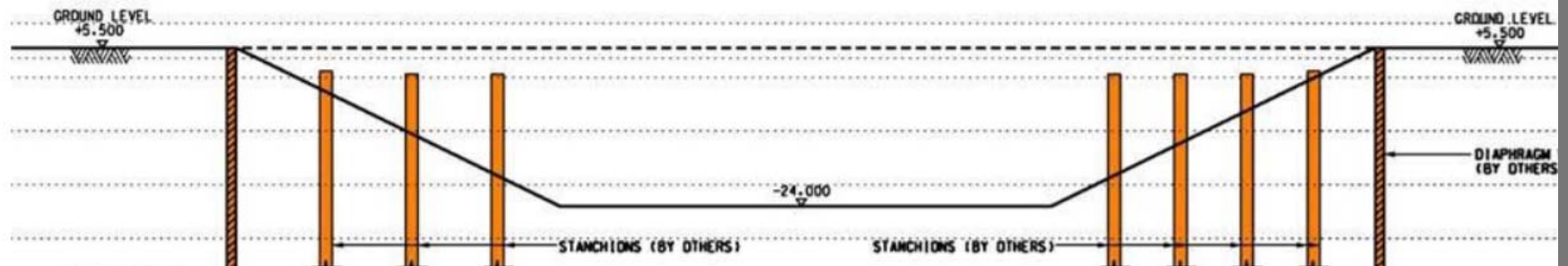
The Express Rail Terminal Site
at West Kowloon (early 2011)



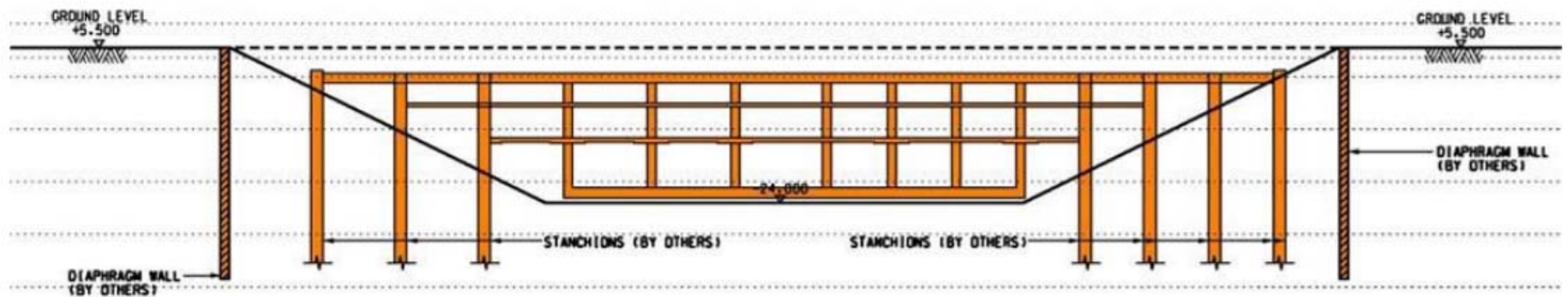
The Express Rail Terminal Site at West Kowloon (November 2011)



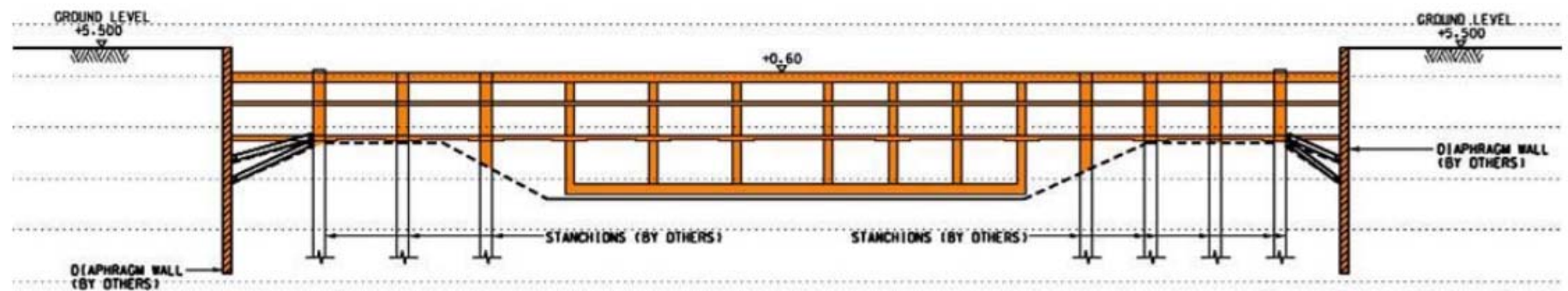
Stage 1



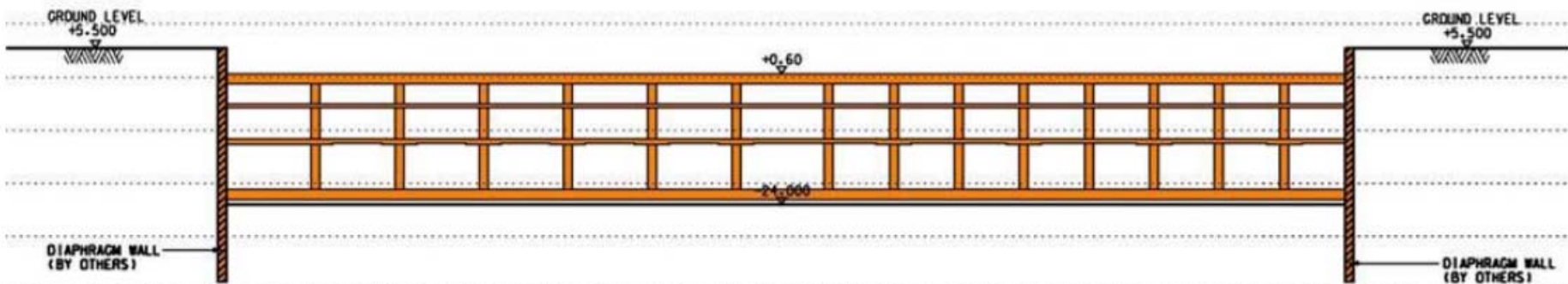
Stage 2



Stage 3



Stage 4



The Express Rail Terminal Site
at West Kowloon (Nov 2011)





Excavation process for the terminus at West Kowloon



Construction using partial
top-down approach





Construction using partial top-down approach



Other MTR stations constructed using top-down approach –
Hang Hau Station of TKO Line

Other MTR stations constructed
using top-down approach –
Kowloon Station



Other MTR stations constructed
using top-down approach –
Kowloon Station



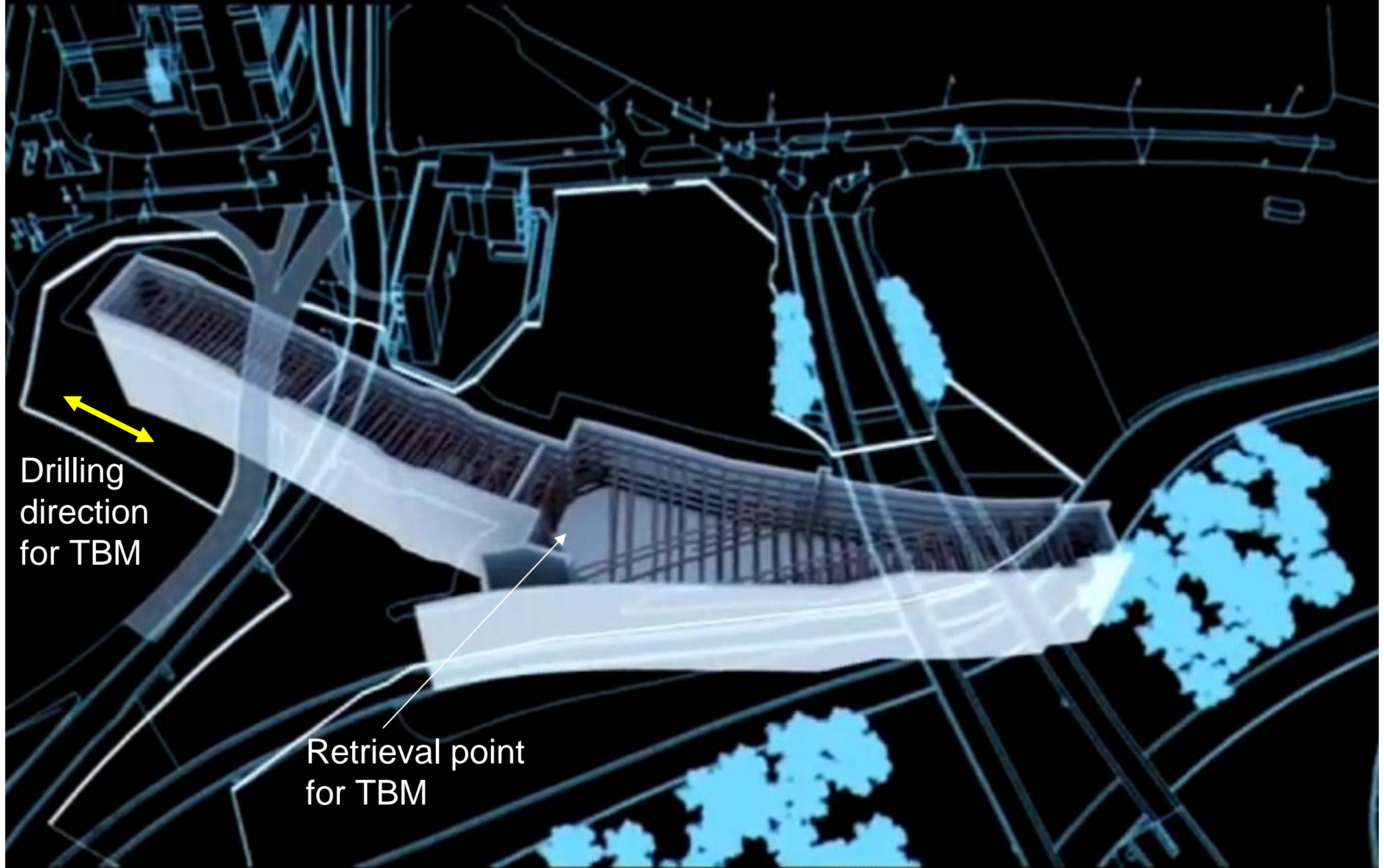


Express Rail Contract 811A,
West Kowloon Approach Tunnel (North)

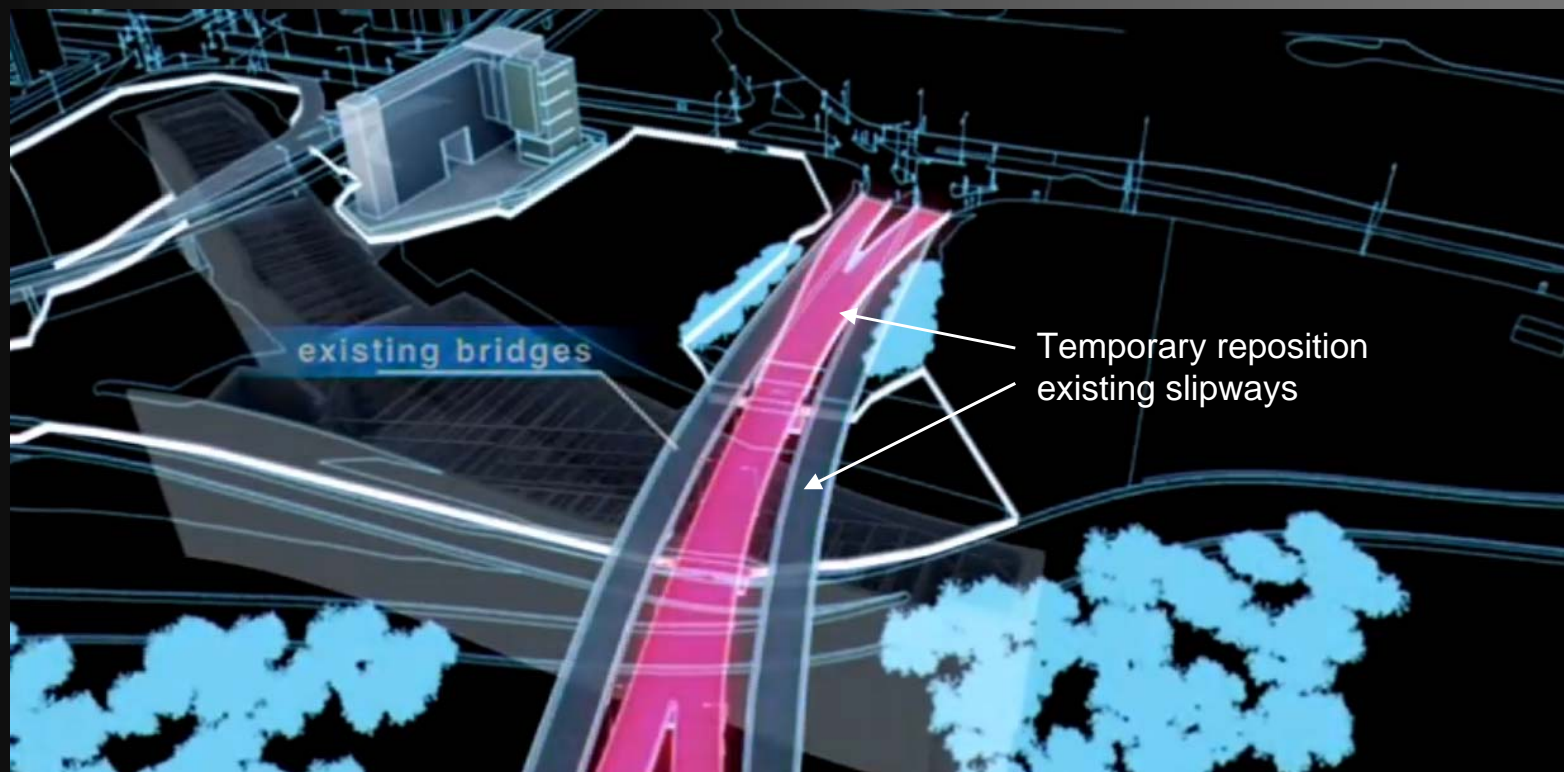
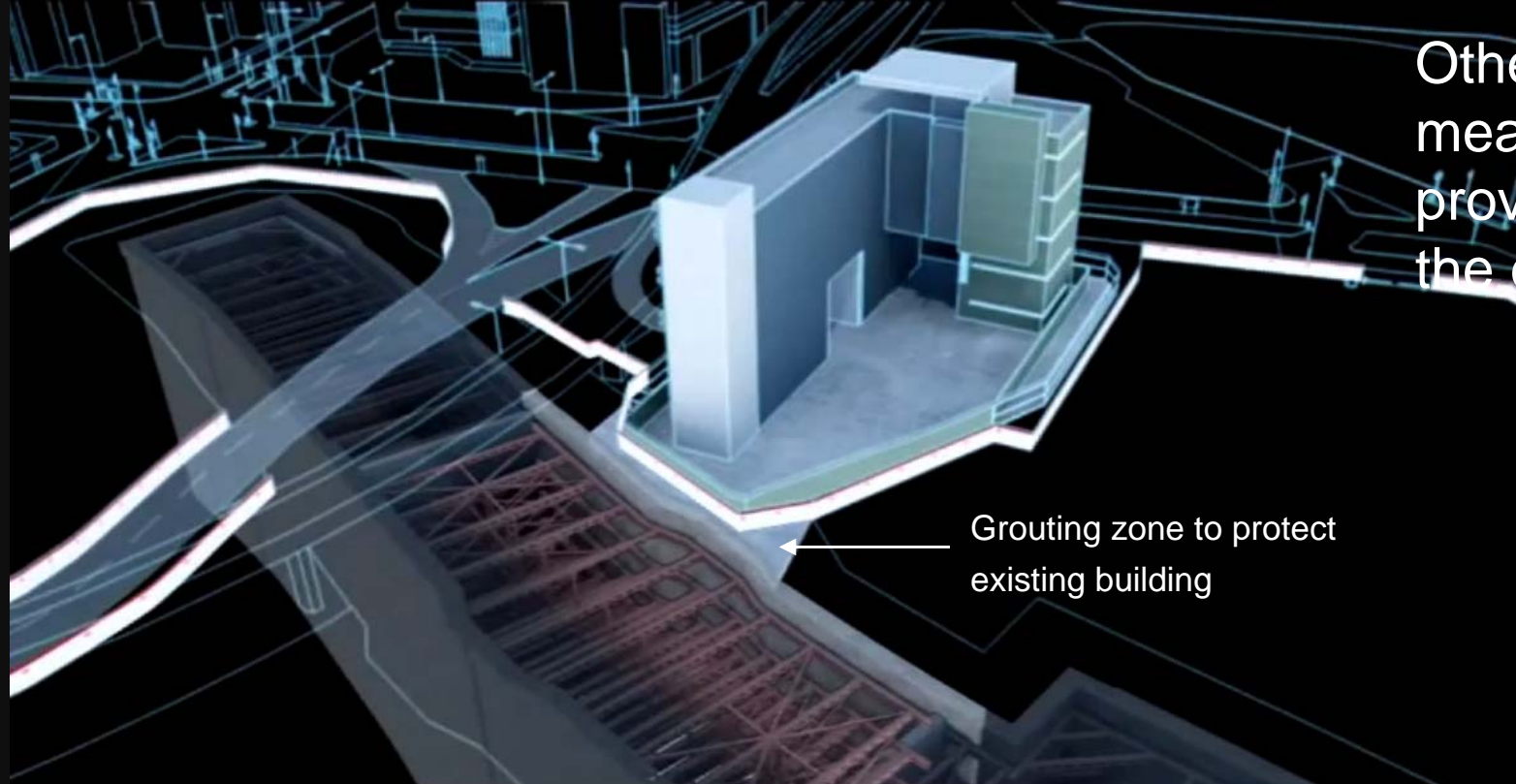
Site location and layout

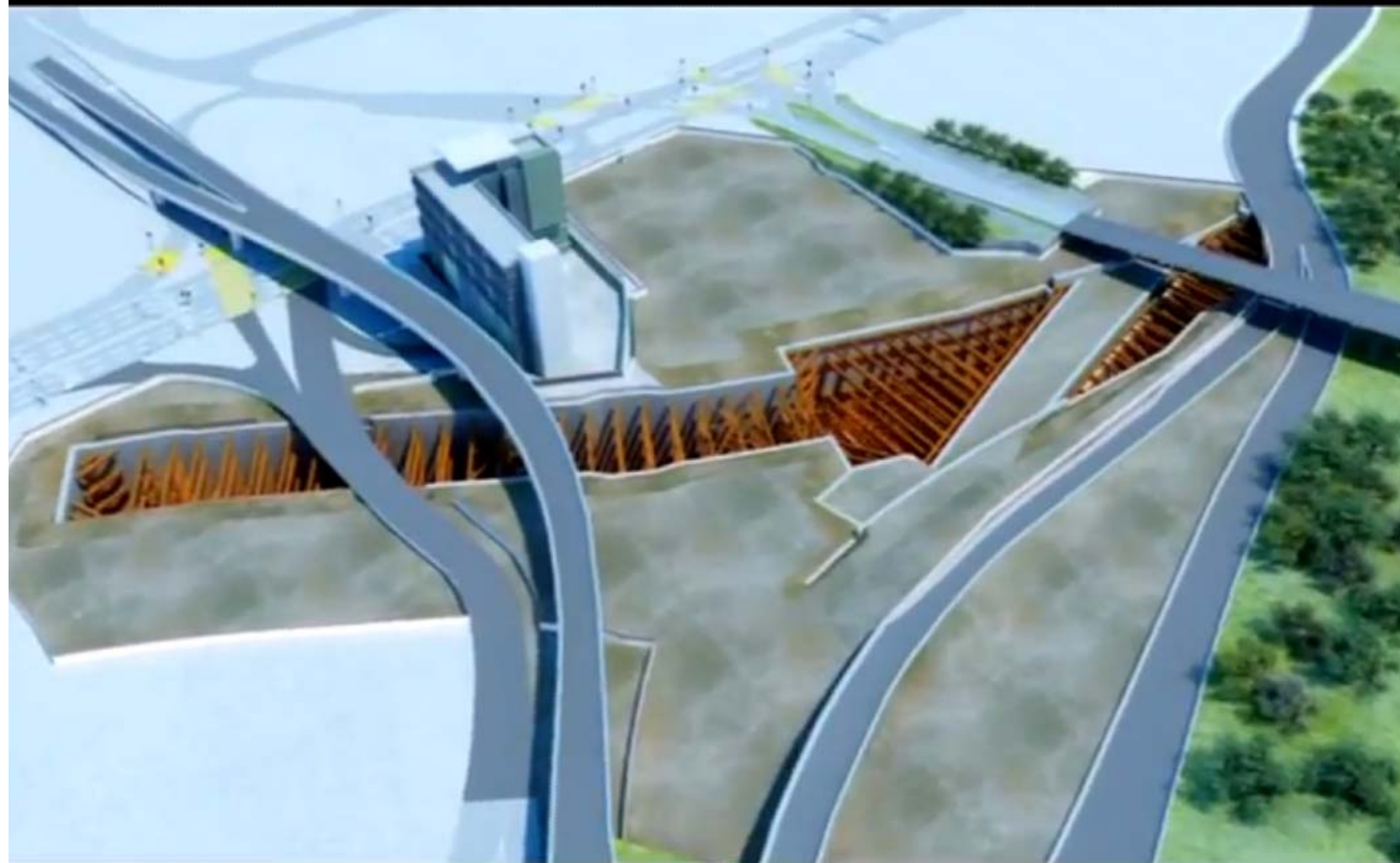


Excavation arrangement of the approach tunnel – diaphragm wall and ELS settings



Other protective measures and provision to facilitate the excavation





The site set-up as in November 2011



The site set-up as in early 2012





Work shaft at Cheung Sha Wan

Sham Shui Po

**Alignment of the
West Rail**

Alignment of the Express Rail



Express Rail crossing Sham Shui Po





Interior view of
the servicing shaft

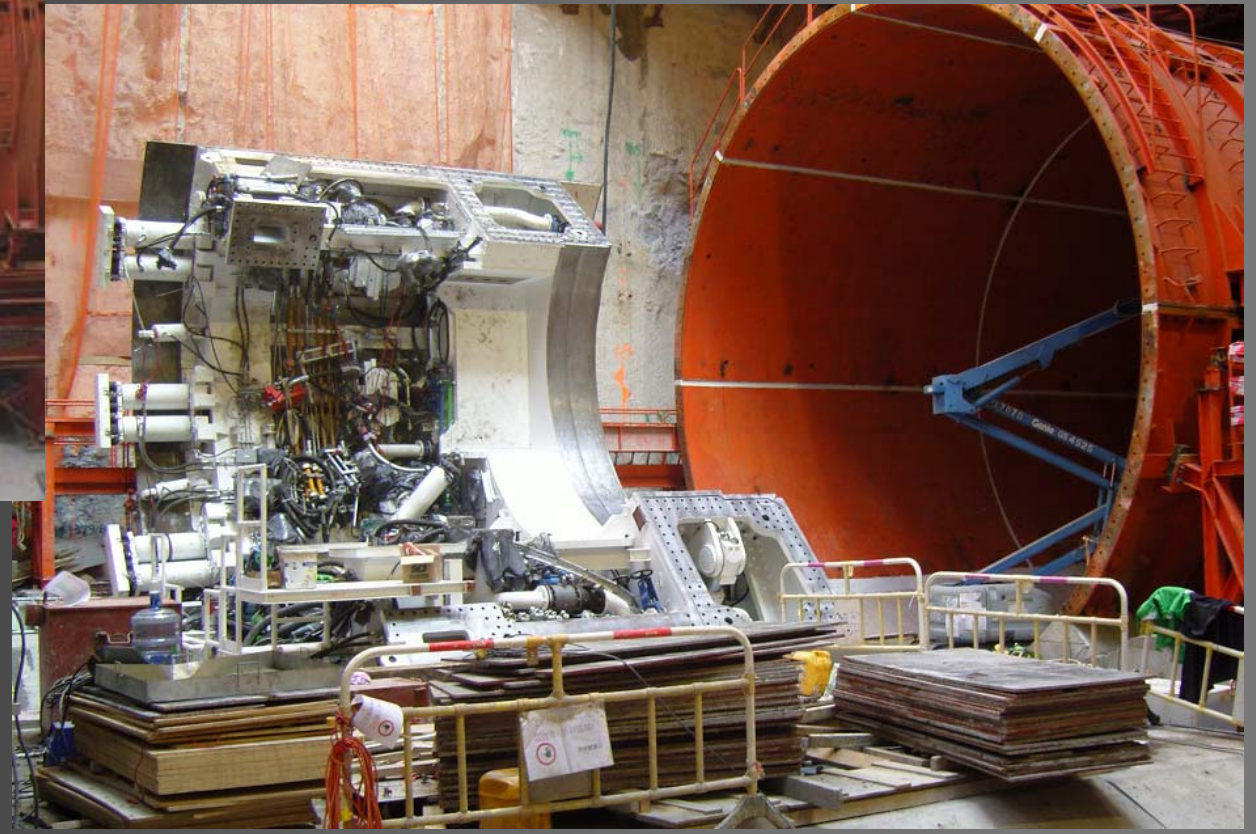


Interior view of the servicing shaft



Installation of the TBM

Installation of the TBM





SSS/ERS and other site advance works (Contract 823B)



Excavation work for
SSS/ERS and other
site advance works
(Contract 823B)



Works in environmental sensitive locations





Commercial development at WKT station north

Hong Kong-Zhuhai-Macao Bridge

The proposed Hong Kong – Zhuhai – Macao Bridge (HZMB), being situated at the waters of Lingdingyang of Pearl River Estuary, is a mega-size sea crossing linking the Hong Kong Special Administrative Region (HKSAR), Zhuhai City of Guangdong Province and Macao Special Administrative Region.

It consists of a Main Bridge in Mainland waters together with the boundary crossing facilities and link roads within the three places. The functions of the Bridge are to meet the demand of passenger and freight land transport among Hong Kong, the Mainland (particularly the region of Pearl River West) and Macao, to establish a new land transport link between the east and west banks of the Pearl River, and to enhance the economic and sustainable development of the three places

The overall project includes a 29.6 km dual 3-lane carriageway in the form of bridge-cum-tunnel structure comprising a tunnel of about 6.7 km; two artificial islands for the tunnel landings west of the HKSAR boundary; and associated works including civil and structural works, environmental mitigation, drainage, electrical and mechanical, traffic control and surveillance system, etc.

On the Hong Kong side, the project further sub-divided into four major elements to achieve the final objectives in a long run, which include

- 1. Carriageway leading to the tunnel/main bridges,**
- 2. Hong Kong Boundary Crossing Facilities,**
- 3. Tuen Mun – Chek Lap Kok Link and**
- 4. the Tuen Mun Western Bypass.**

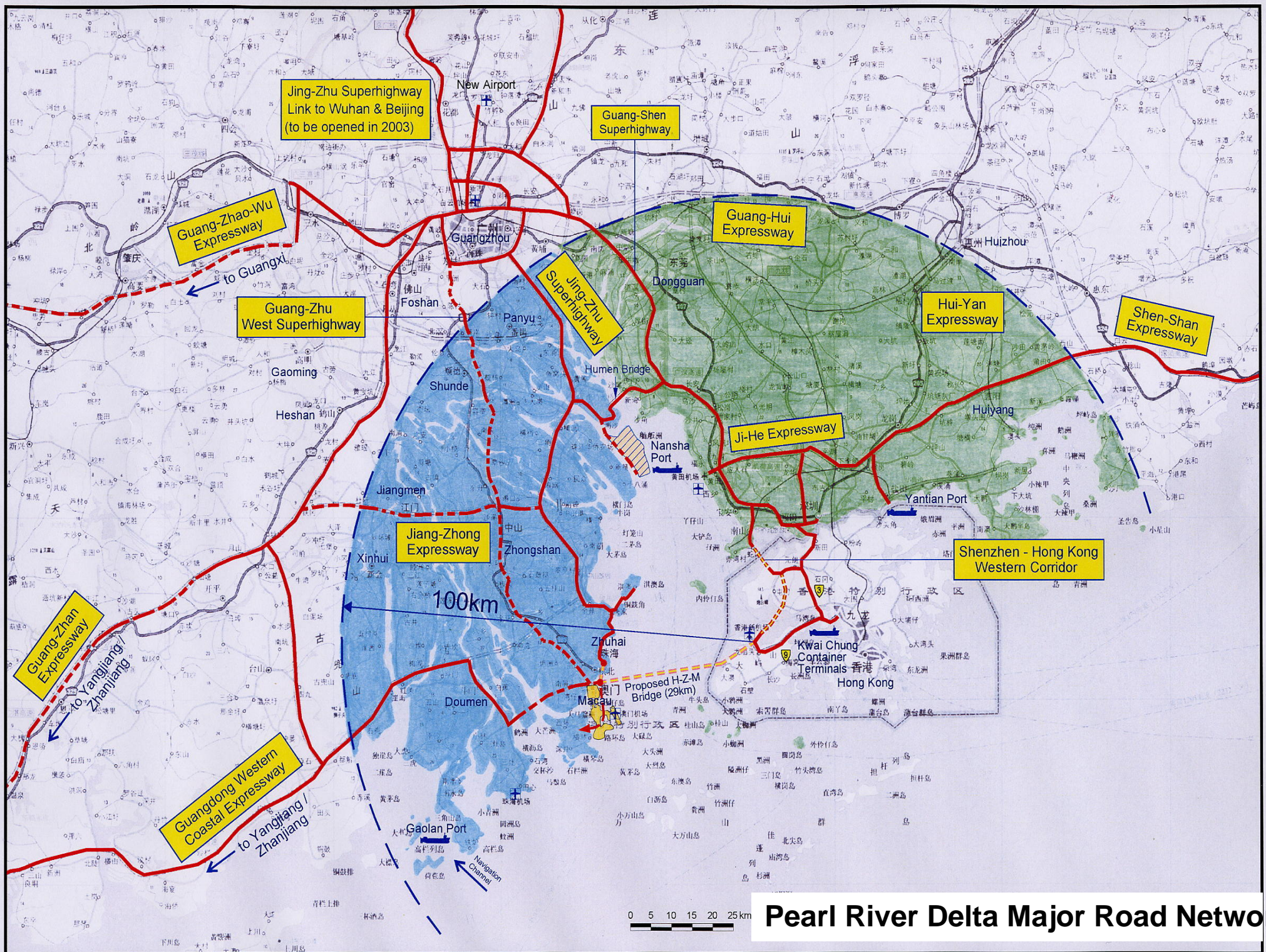
Some background

On 9 Jan 07, the Central Government announced the establishment of the HZMB Task Force to help push the project ahead. The Task Force is headed by the National Development and Reform Commission, with representatives from the Ministry of Communications, Hong Kong and Macao Affairs Office of the State Council and the governments of Guangdong, HKSAR and Macao SAR as members. The Task Force held its first meeting on 9 Jan 07.

With the continuous effort of the three governments, the Hong Kong-Zhuhai-Macao Bridge Advance Work Co-ordination Group has at its 8th AWCG Meeting held on 28 Feb 08 agreed to the construction option, financing arrangement as well as the next stage of work. The governments of Guangdong, HK and Macao have reached a further consensus on the financing arrangement for the HZMB in August 2008.

Apart from the earlier agreement for each of the three governments to be responsible for the construction of the Boundary Crossing Facilities and link roads within their respective territory, the three sides have further agreed to take up the responsibility for the construction of the Main Bridge.

The bridge will cross major navigation channels like the Lingding Channel, the Tonggu Channel, the Qingzhou Channel, the Jiuzhou Port Channel, and the Jianghai Channel etc.




Pearl River Delta Major Road Network

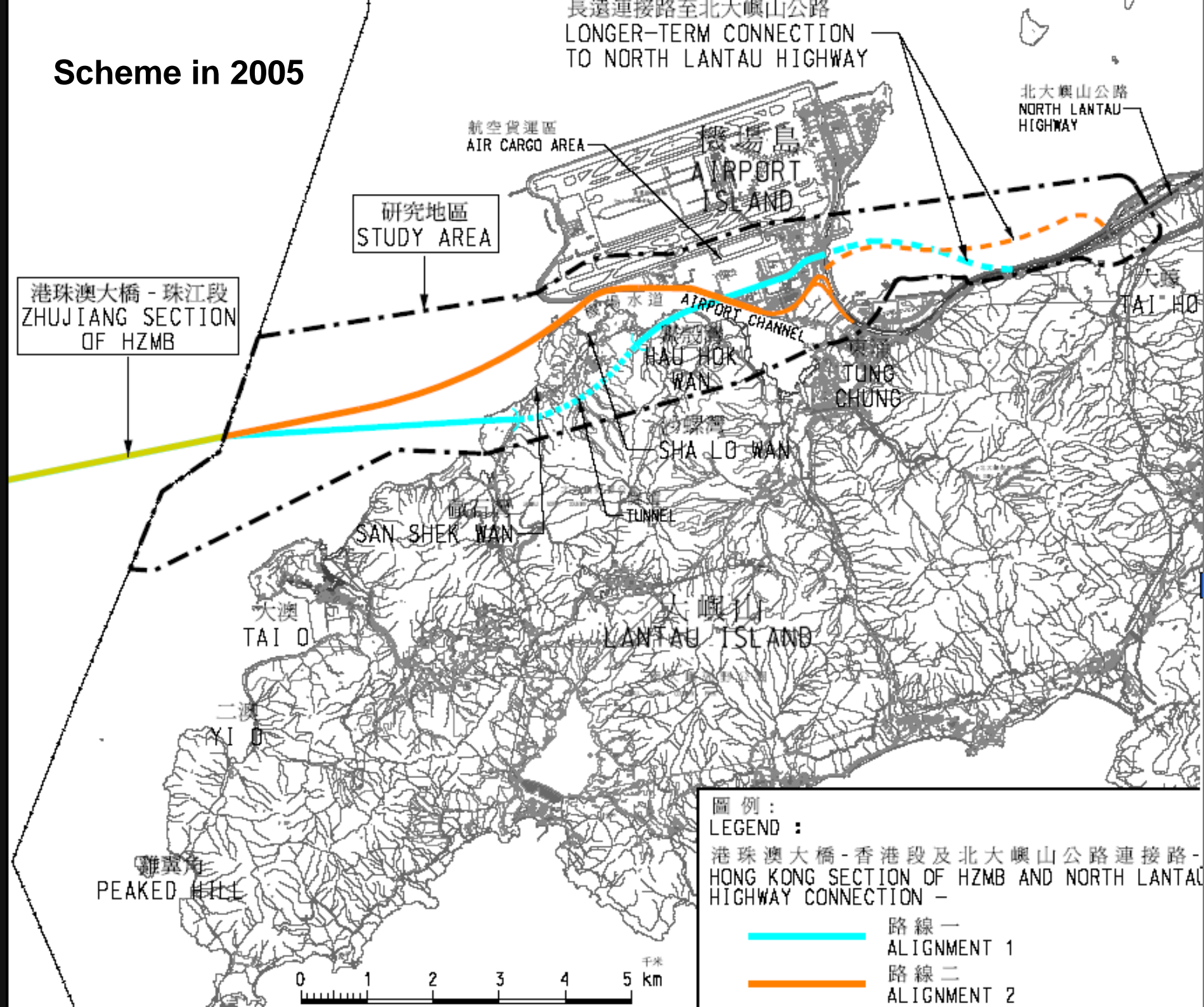


圖則名稱 drawing title

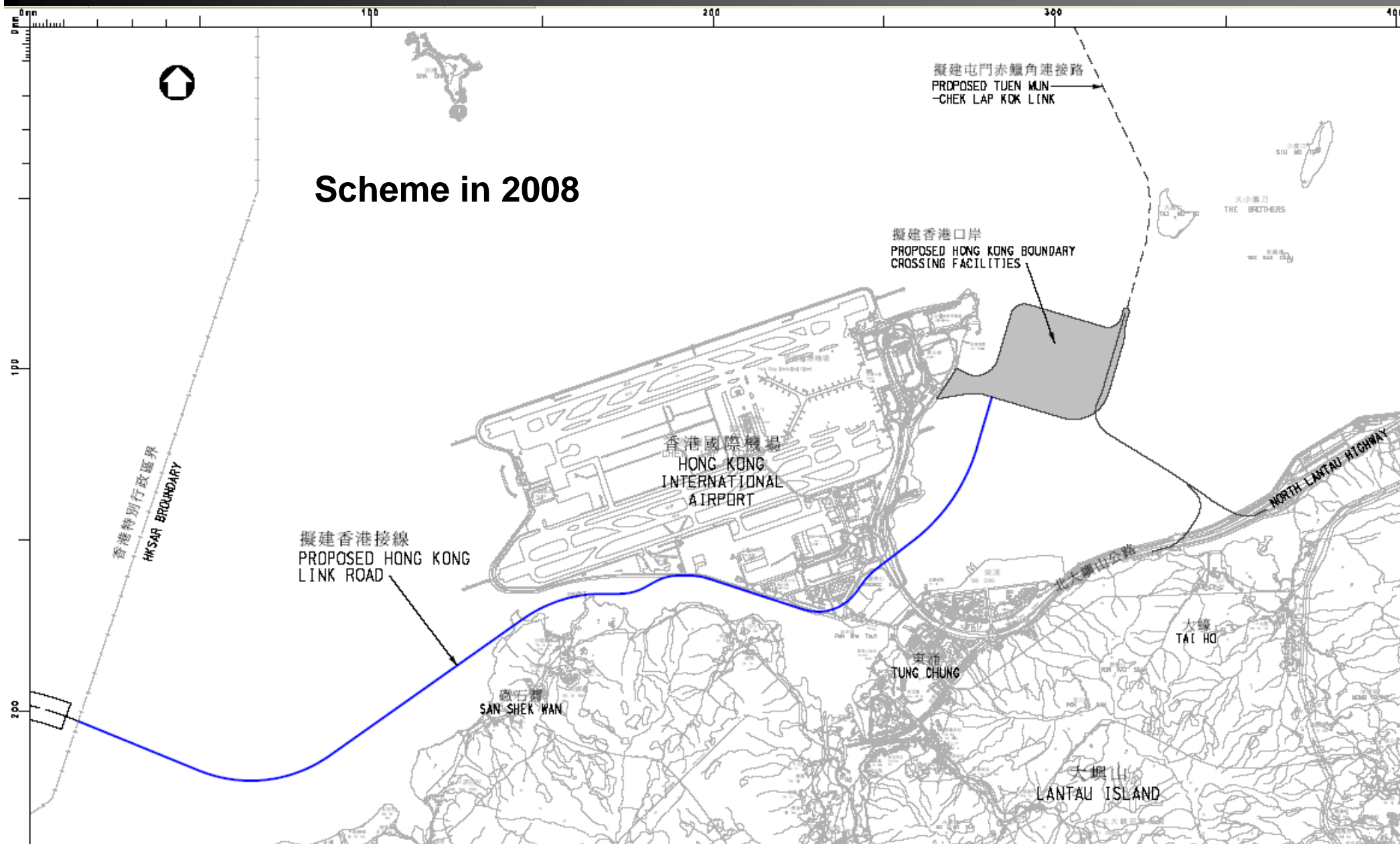
港珠澳大橋
HONG KONG-ZHUHAI-MACAO BRIDGE

設計 designed	WH YIP	04/01/11	繪圖 drawn	CK WONG	05/01/11	圖則編號 drawing no.	HZM80030R-PD0010	比例 scale	1:200000
覆核 checked	T W L I		批准 approved	Y K LAM		(C) 版權所有 COPYRIGHT RESERVED			
港珠澳大橋香港工程管理局 HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE						 HIGHWAYS DEPARTMENT 路政署 HONG KONG 香港			

Scheme in 2005



Scheme in 2008

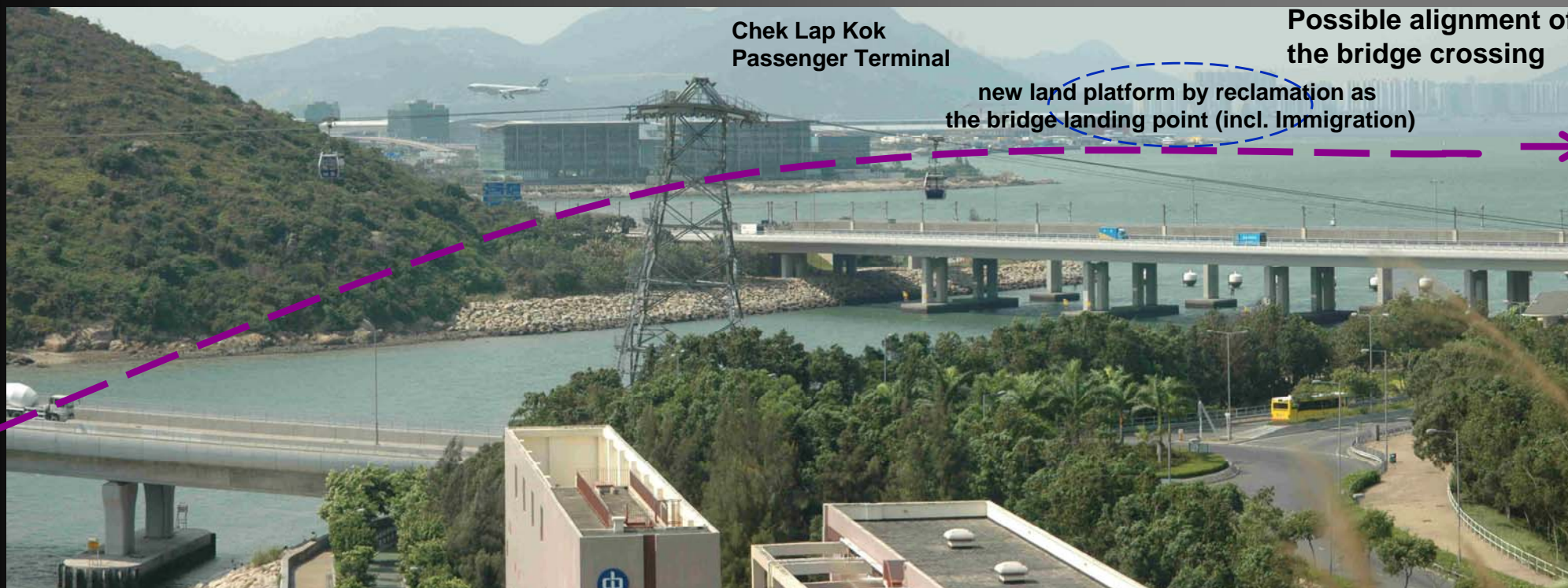


港珠澳大橋香港接線

HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG LINK ROAD



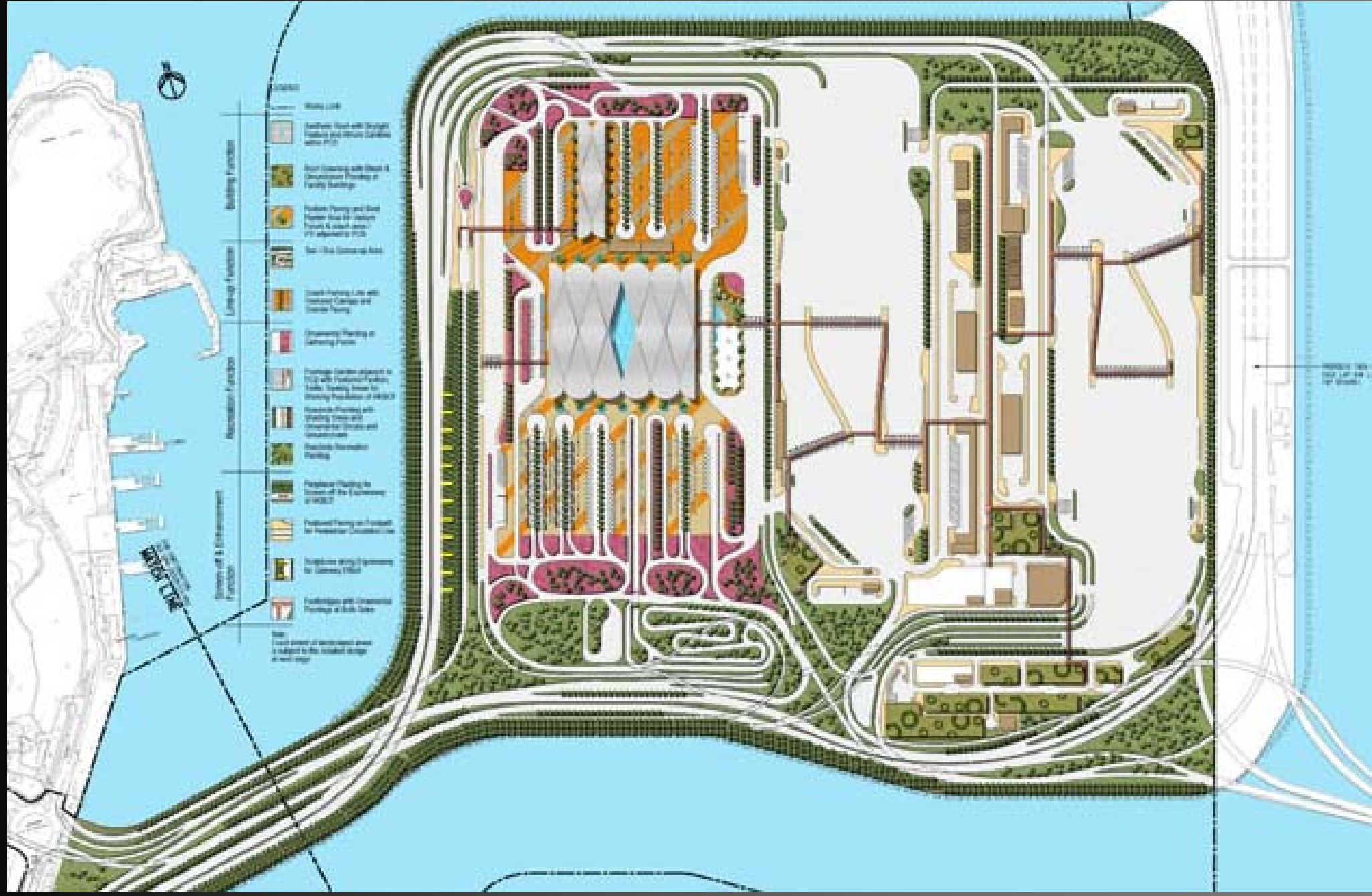
Proposed bridge
landing site outside
Tung Chung Old Town



Artistic view of the
future link road

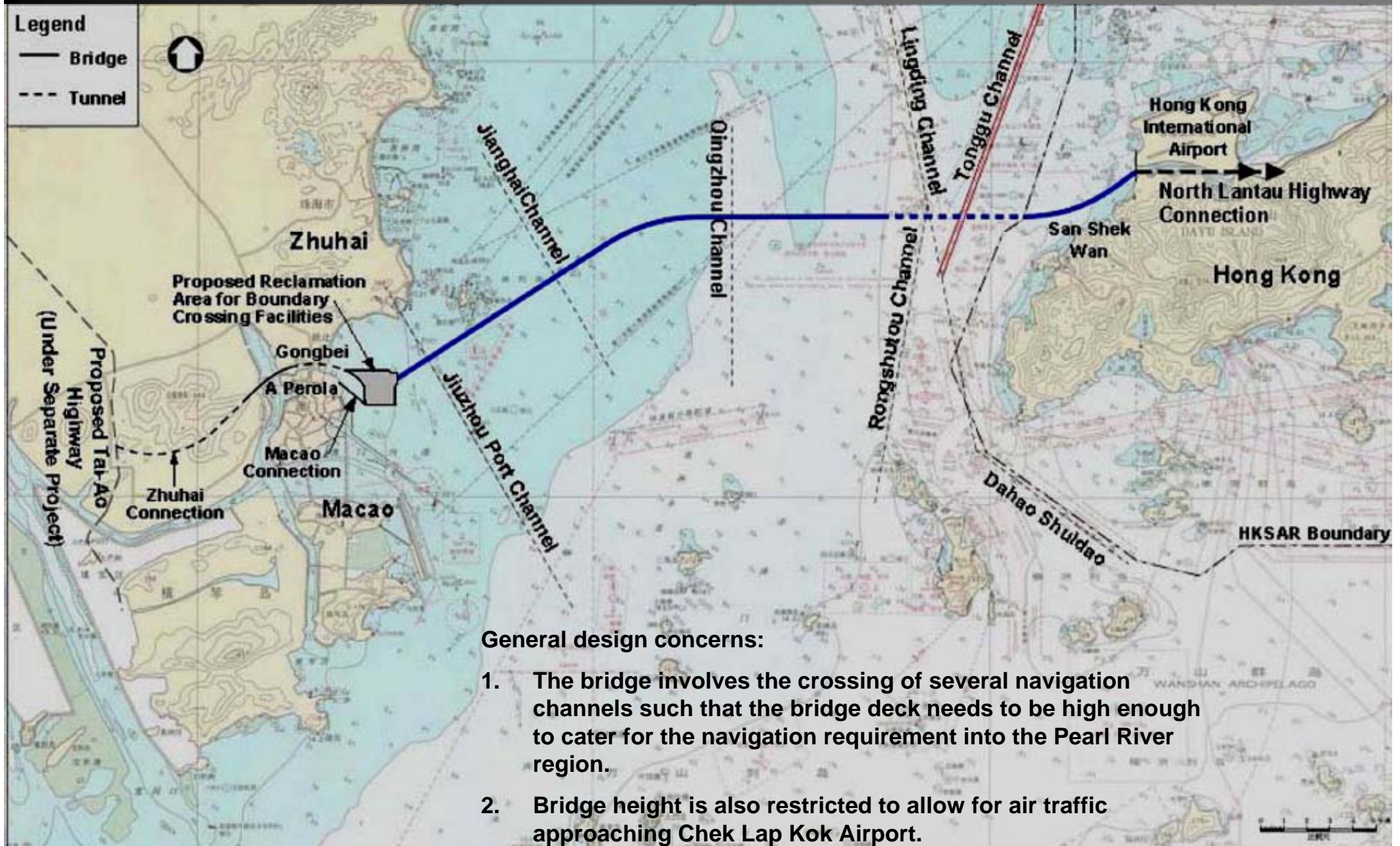






Artistic view of the Hong Kong Cross Boundary Facilities





3. The carriageway to fit this requirement will consist of a submerged tunnel and a series of medium to long-span bridges at several navigation channels for standard vessels.

圖例
LEGEND

港珠澳大橋主體
HONG KONG-ZHUHAI-MACAO BRIDGE
MAIN BRIDGE

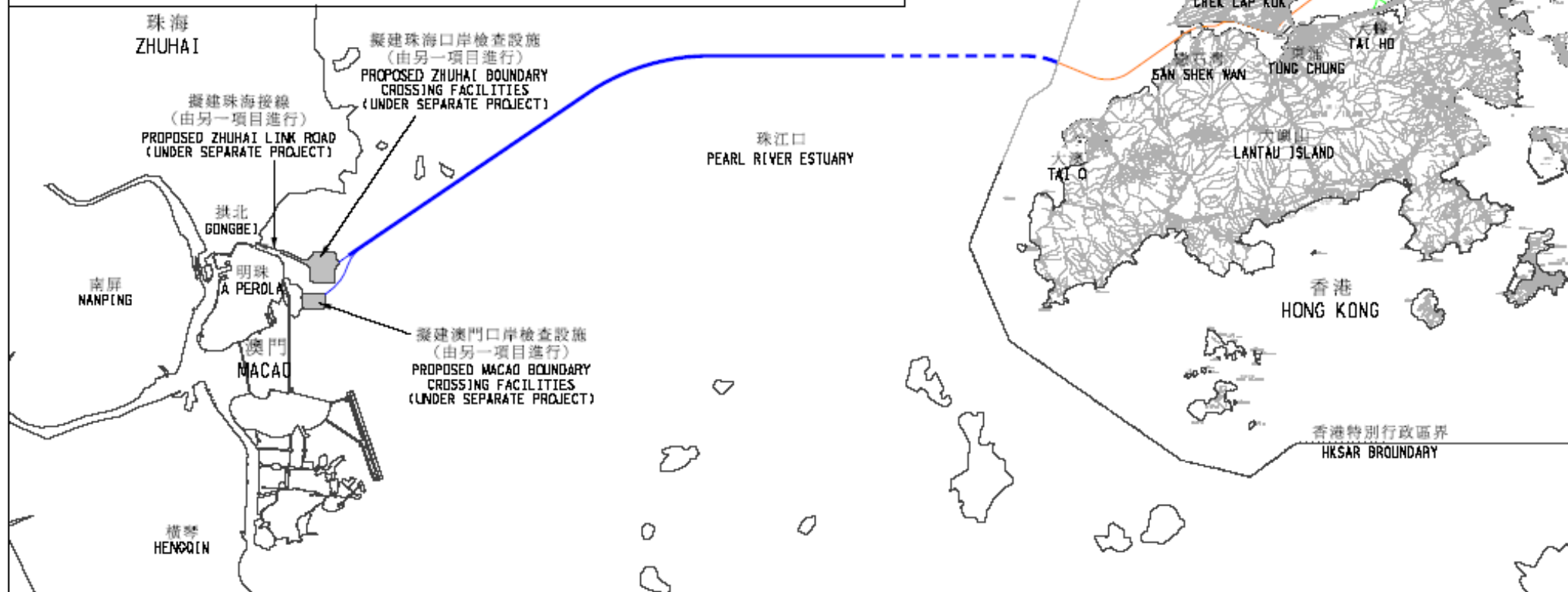
- 擬建橋樑
PROPOSED BRIDGE
- 擬建隧道
PROPOSED TUNNEL

相關香港工程項目
RELATED HONG KONG PROJECTS

- 擬建屯門至赤鱗角連接路及屯門西繞道(示意路線)
(工務計劃項目第825TH號)
PROPOSED TUN MUN-CHEK LAP KOK LINK AND TUN MUN WESTERN BYPASS (INDICATIVE ALIGNMENT)
(PWP ITEM No. 825TH)
- 擬建港珠澳大橋香港口岸(示意位置)
(工務計劃項目第834TH號)
PROPOSED HONG KONG-ZHUHAI-MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES (INDICATIVE LOCATION)
(PWP ITEM No. 834TH)
- 擬建港珠澳大橋香港接線(示意路線)
PROPOSED HONG KONG-ZHUHAI-MACAO BRIDGE HONG KONG LINK ROAD
(INDICATIVE ALIGNMENT)

註釋：所有示意路線及位置都可能修改。

NOTES: ALL INDICATIVE ALIGNMENTS / LOCATION ARE SUBJECT TO CHANGE.



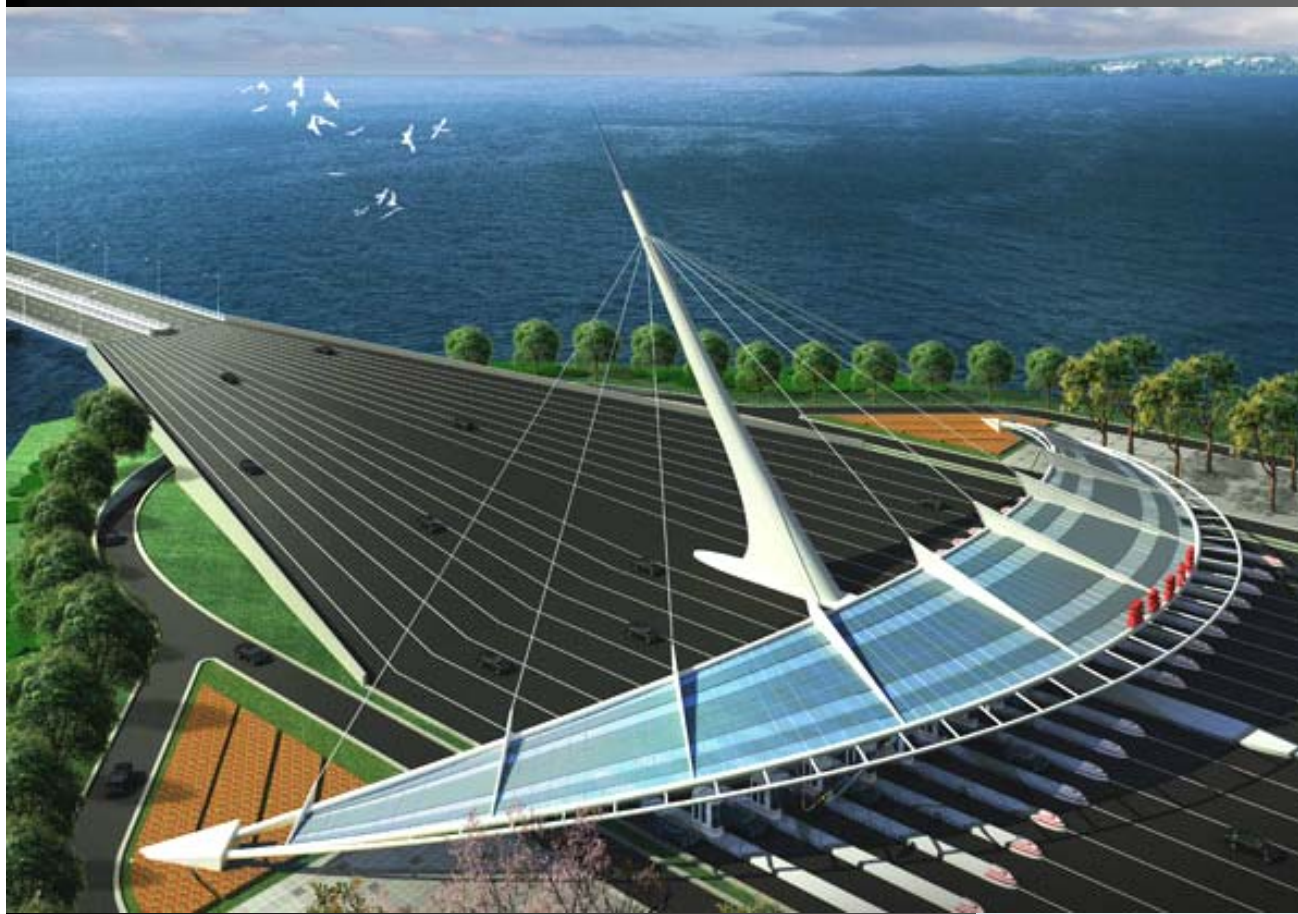
圖則名稱 drawing title

工務計劃項目第835TH號 - 港珠澳大橋 - 施工前工作
PWP ITEM No. 835TH - HONG KONG-ZHUHAI-MACAO BRIDGE
- PRECONSTRUCTION WORKS

設計 designed T W L C	03/04/08	繪圖 drawn Y L SHIU	17/04/08	圖則編號 drawing no. HZN6835TH-SK0002	比例 scale 不接比例 N.T.S.
覆核 checked W C LAU		批准 approved H C TAN		版權所有 COPYRIGHT RESERVED	
港珠澳大橋香港工程管理局 HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE				路政署 HONG KONG HONG KONG	

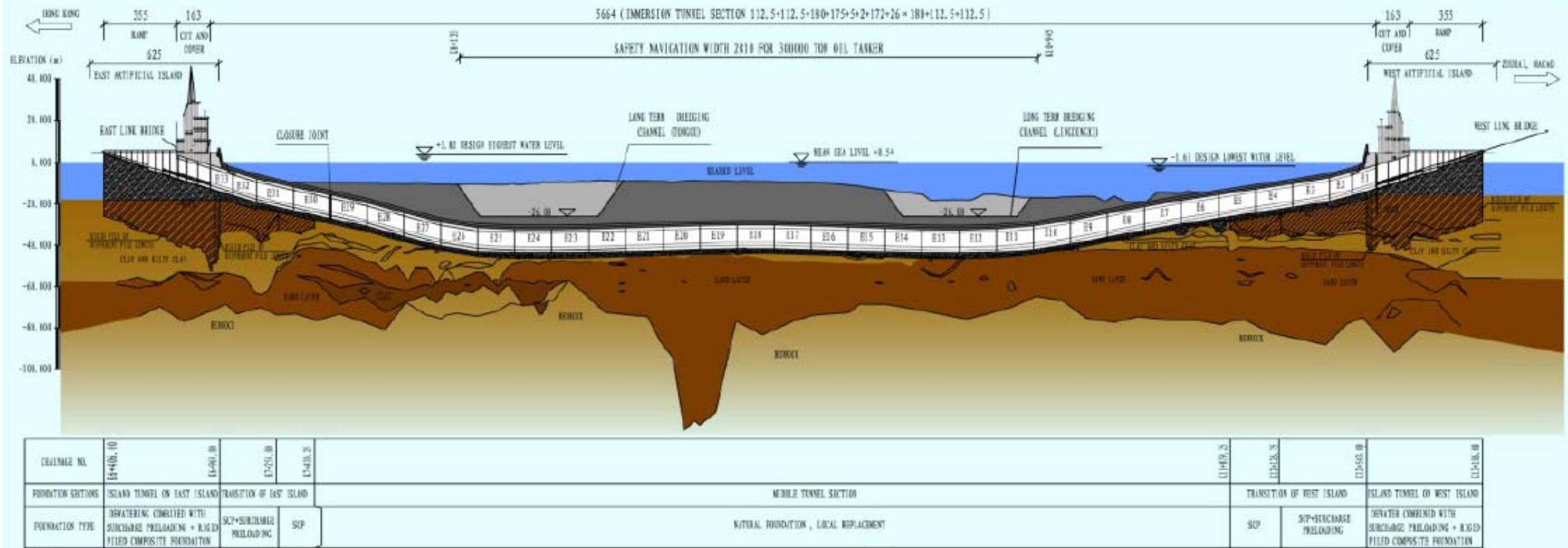
The main bridge and
the channel tunnel



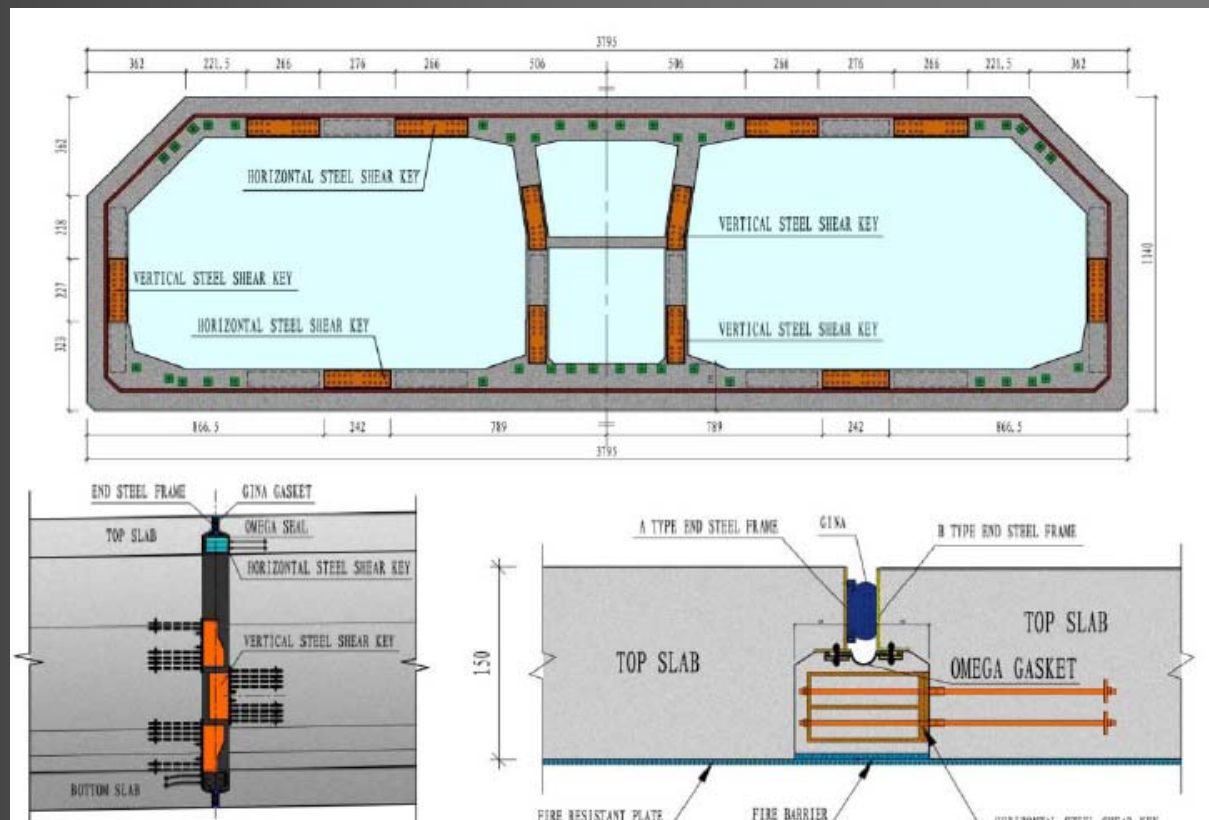


Artistic view of the tolling plaza
of the HK-Zhuhai-Macau Bridge
and the entrance approach to
the channel tunnel





The Island-Tunnel section of the HZM Bridge Link using immerse-tube method





屯門西繞道
Tuen Mun Western Bypass

屯門至赤鱗角連接路
Tuen Mun - Chek Lap Kok Link

擬建港珠澳大橋香港接線
Proposed Hong Kong - Zhuhai - Macao Bridge
Hong Kong Link Road

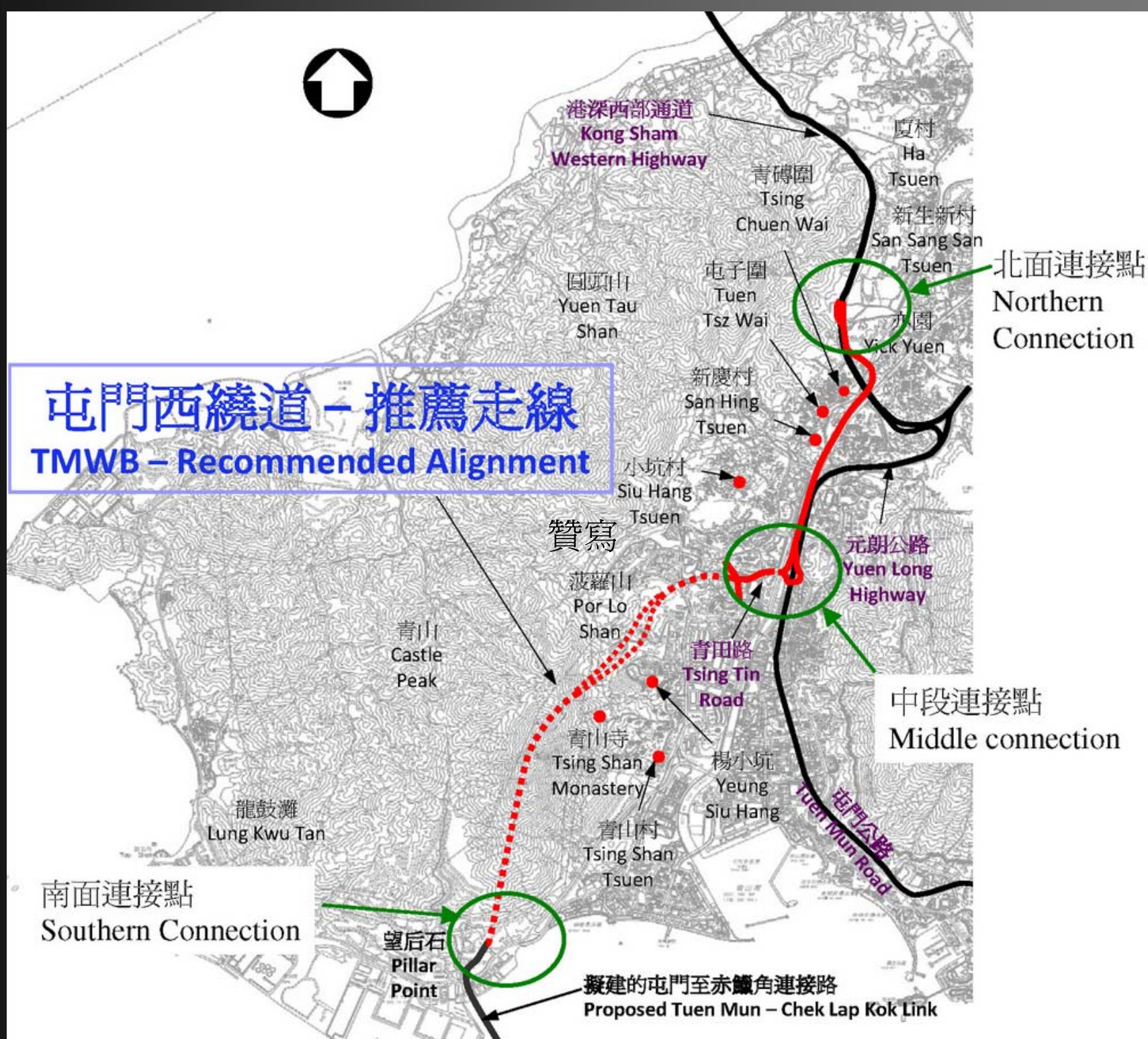
香港國際機場
Hong Kong International Airport

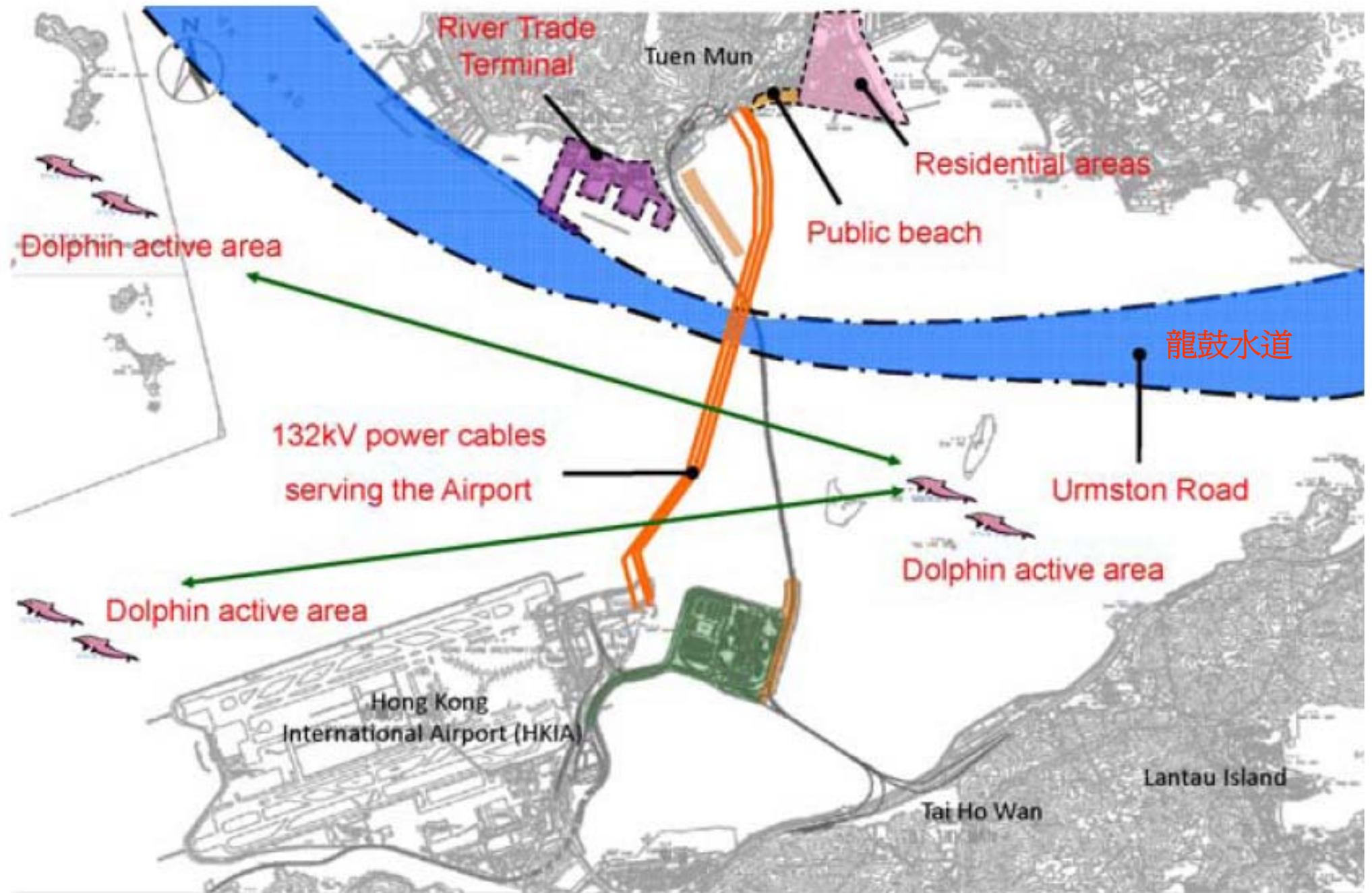
大嶼山
Lantau

Bridge 橋樑
Tunnel 隧道



屯門西繞道 - 推薦走線 TMWB - Recommended Alignment





Project Constraints



Artistic view of the landing point of the Tuen Mun – Chek Lap Kok Link
near the Harbour and River Trade Terminal at Butterfly Beach

Hong Kong-Shenzhen Airport Co-operation

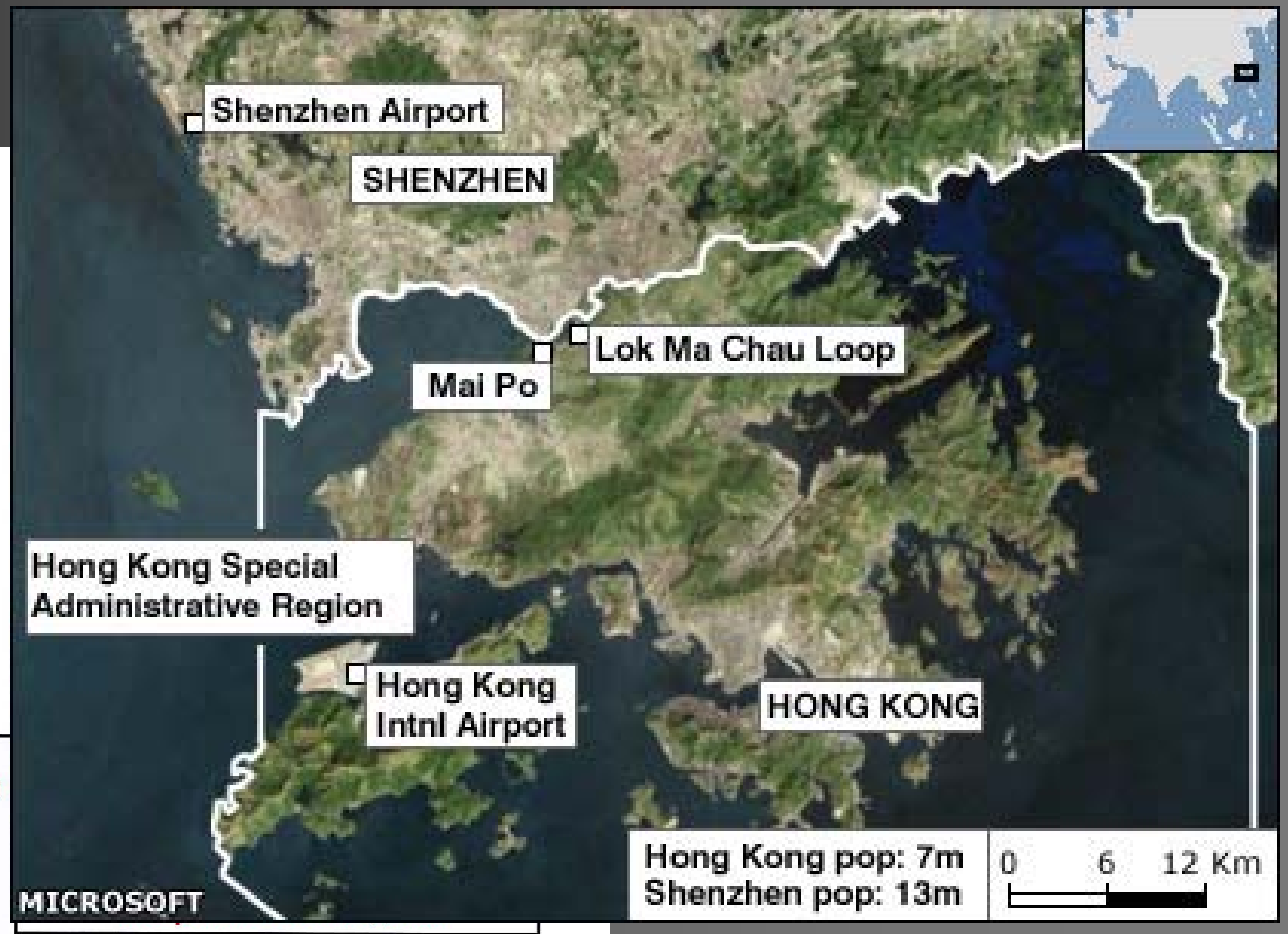
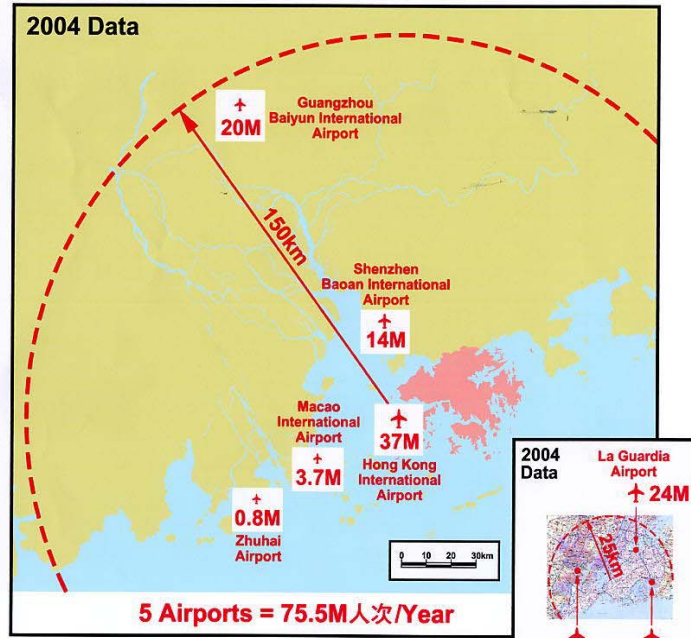
The HK International Airport (HKIA) and Shenzhen Airport are two major airports in the PRD region. The HKIA ranks among the top few busiest international airports in the world in terms of both passenger and cargo traffic, while Shenzhen Airport handles far more domestic flights than Hong Kong. The cooperation will for sure strengthen the air-linkage between HK and mainland China as well as China to the international world.

For the two airports to fully complement each other and achieve a win-win situation, it is necessary to study the feasibility and economic benefits of establishing a rail connection between the two. Currently, high-speed ferry and bus services are provided by various operators between the two airports. A rail link can forge even closer ties.

At present, both Governments strongly support the proposals on further co-operation between the two airports. A joint task force will be formed in the coming years to follow up the planning and implementation of the scheme. The Airport Authority of HK will provide research support to the task force. Specific work plans is expected to be drawn up in early 2008.

Airport Coverage

Total Population of PRD + Hong Kong + Macao: 53M 人口



Current utilization of the nearby airports in 2007

Airport	Passenger	Air-cargo
Shenzhen	20M	0.7M
Hong Kong	40M	3.5M tons
Guangzhou	28M	1.5M



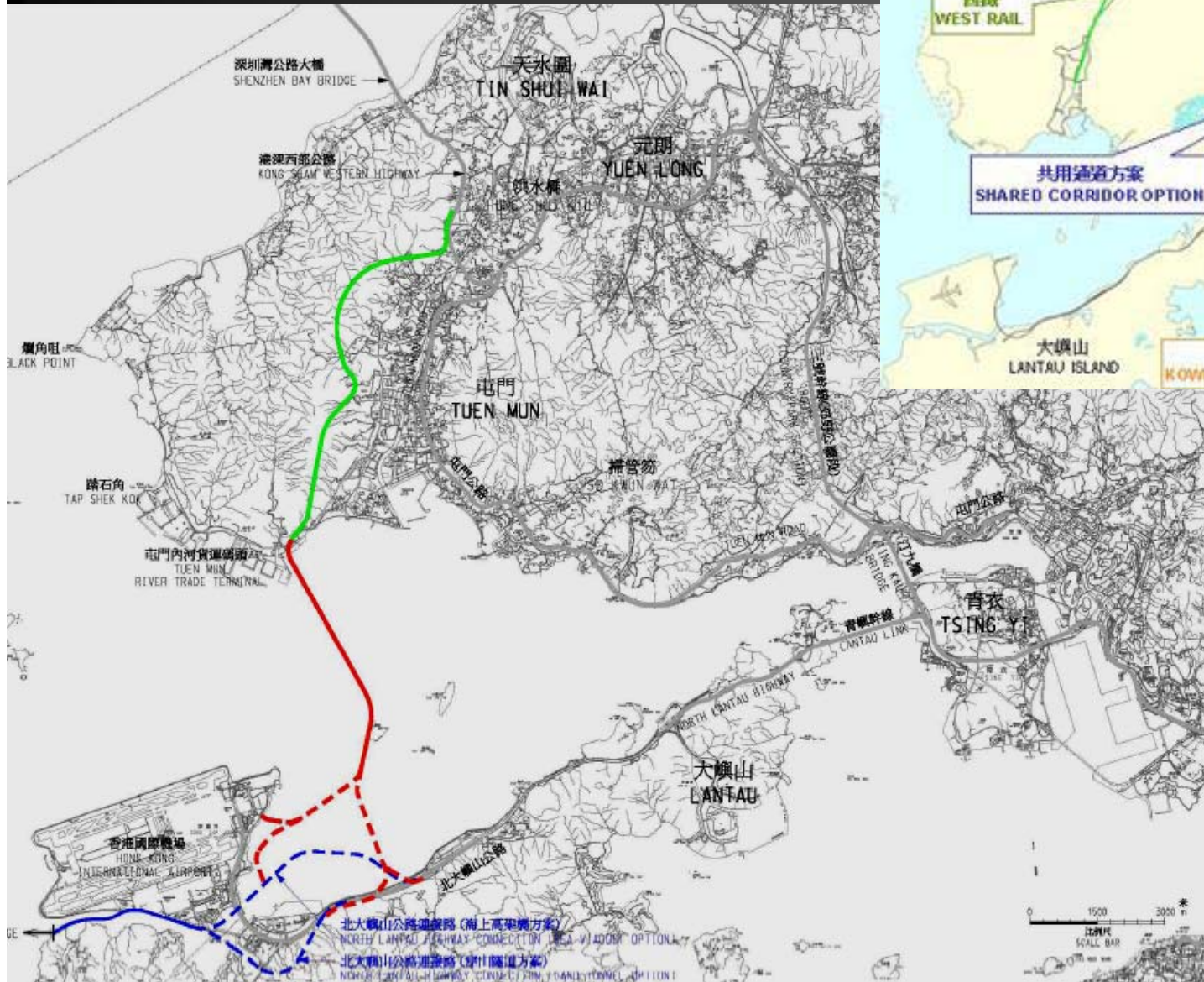
A satellite map of the Hong Kong-Shenzhen region. The map shows the coastline of Shenzhen on the left and the New Territories of Hong Kong on the right. A red oval highlights the Shenzhen Airport area. A large cyan oval encompasses a significant portion of the land area, including parts of Shenzhen and the New Territories. A red location pin is placed on a small island in the southern part of the New Territories. A legend in the bottom left corner shows a cyan oval and text indicating an area without railway service.

**Shenzhen
Airport**

**HKIA
at CLK**

Area without
railway service
at present

- most likely based on the proposed Regional Express Line or the Chek Lap Kok-Tuen Mun Link and connect to Lok Ma Chau for interchanging to a new line from Huanggang to the Shenzhen Airport along the west coast in mainland.

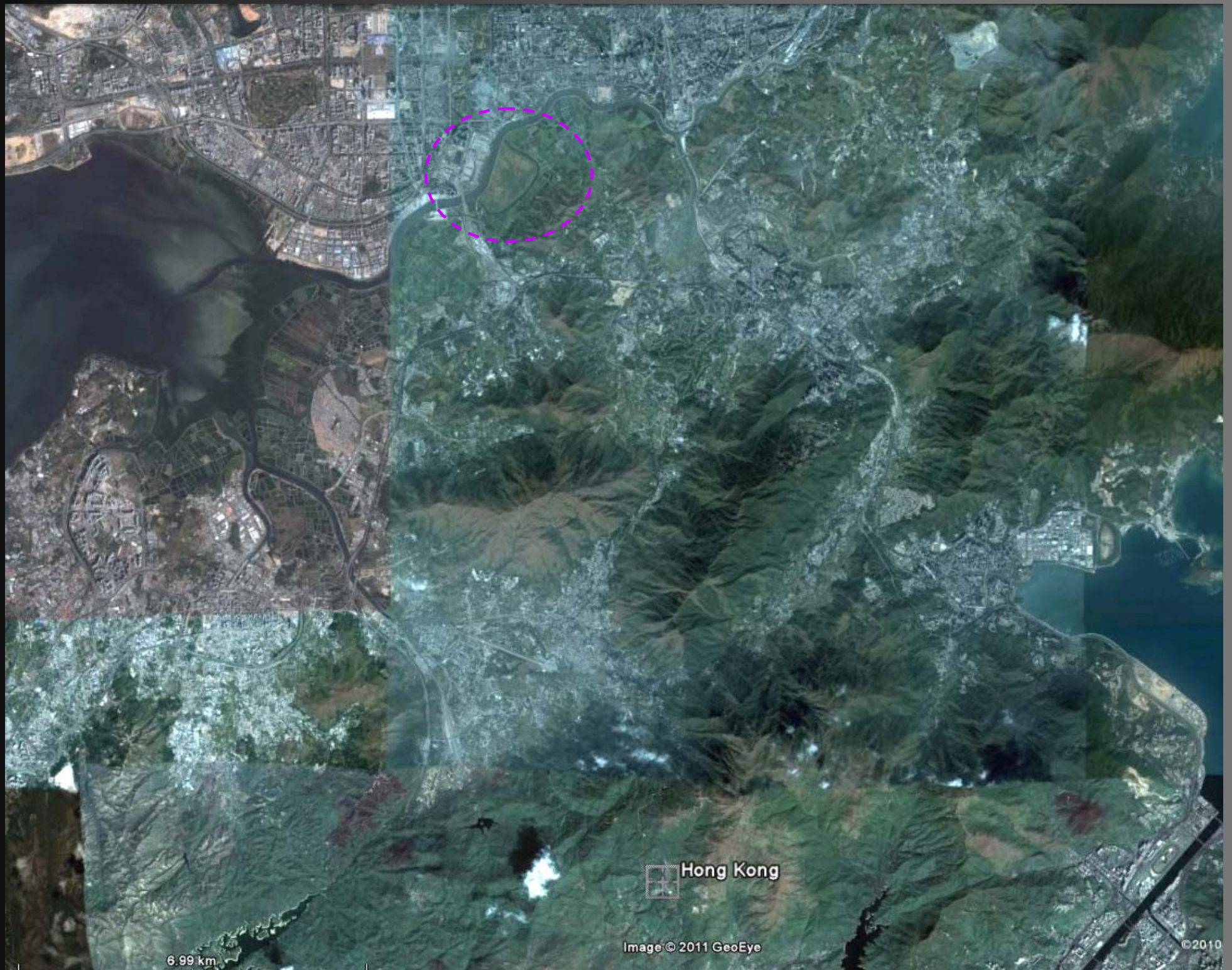


Hong Kong-Shenzhen Joint Development of the Lok Ma Chau Loop

As neighbours, Hong Kong and Shenzhen can achieve a win-win situation for both sides by adopting an integrated regional development strategy. Apart from enhancing cross-boundary transport links, government of HK will work with the Shenzhen authorities to tap the land resources of the Lok Ma Chau Loop to meet future development needs and consolidate the strategic position of Shenzhen and Hong Kong in the Pan-PRD region.

To achieve the target, a high-level coordinating mechanism will be established between the two governments to jointly explore the feasibility of developing the Lok Ma Chau Loop to achieve mutual benefit, and steer further research and planning work on other cross-boundary issues.





6.99 km



Hong Kong

Image © 2011 GeoEye

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Shenzhen Convention
and Exhibition Centre

Shenzhen
Huanggang
new city axis

Lok Ma Chau
Loop

Shenzhen Metro Line

Lok Ma Chau Spur Line

Lok Ma Chau
Station and
Immigration
Control Point

Lok Ma Chau Loop



Lok Ma Chau Loop Study



- ◆ The Loop falls within the administration boundary of HKSAR after completion of Stage I Shenzhen River Training Project in May 1997
- ◆ Ownership issue of the land would need to be resolved with Shenzhen side





Current land-use condition of the areas near the Lok Ma Chau Loop

Lok Ma Chau Loop as viewed from the Rail Station

