

**Technical Seminar organized by the
Institution of Engineering & Technology**

**“An overview on Infrastructural
Development in Hong Kong since 2000”**

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City University of Hong Kong
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A general understand and Review of the
scope and nature of Infrastructure
Developments in Hong Kong

**General Classification of Infrastructure
Development/Projects**

1. Transportation facilities including highway and railway projects
2. Port and Airport development projects
3. Land formation projects
4. New Town development projects
5. Environmental and Sewage projects
6. General urban facilities including water and power supply

Procuring Agents for Infrastructure Projects

1. Highway Department – highway, bridges and large-scale roadwork
 2. Civil Engineering Department* – land formation, reclamation, port and marine works, environment improvement works
 3. Territory Development Department* – Airport Core Projects, New Town Development, other assignment projects similar to CE Dept.
 4. Drainage Services Department – Flood control, large-scale drainage works and SSDS/HATS projects
 5. Water Supplies Department – large-scale water supply/distribution works
- * the two depts. merged to become the Civil Engineering Development Department (CEDD) since 2004.

Procuring Agents for Infrastructure Projects

6. Mass Transit Railway Corporation – all railway works managed/operated by the MTRC
7. Kowloon Canton Railway Corporation – all railway works managed/operated by the KCRC
8. Airport Authority – projects related to the construction of the new airport in Chek Lap Kok and the continuous extension projects
9. Other Franchised Organizations (in BOT projects), for example:
 - Tate's Cairn Tunnel
 - Eastern Harbour Crossing
 - Western Harbour Crossing
 - Tai Lam Tunnel

Highlight of the Major Infrastructure Development of Hong Kong since 1990

Constituents of the Airport Core Projects

1. New Airport at Chek Lap Kok
2. Tung Chung New Town
3. North Lantau Expressway
4. Airport Railway
5. Lantau Fixed Crossing
6. Route 3 (Kwai Tsing Section)
7. West Kowloon Reclamation
8. West Kowloon Expressway
9. Western Harbour Crossing
10. Central Reclamation (Phase 1)

This seminar will discuss the major infrastructure developments of Hong Kong since 2000, under the general category as follow:

1. Railway projects
2. Highway projects
3. Land formation projects
(reclamation & Site formation)
4. Recent Ten Major Infrastructure Projects

Summary of Major Recent Railway Projects

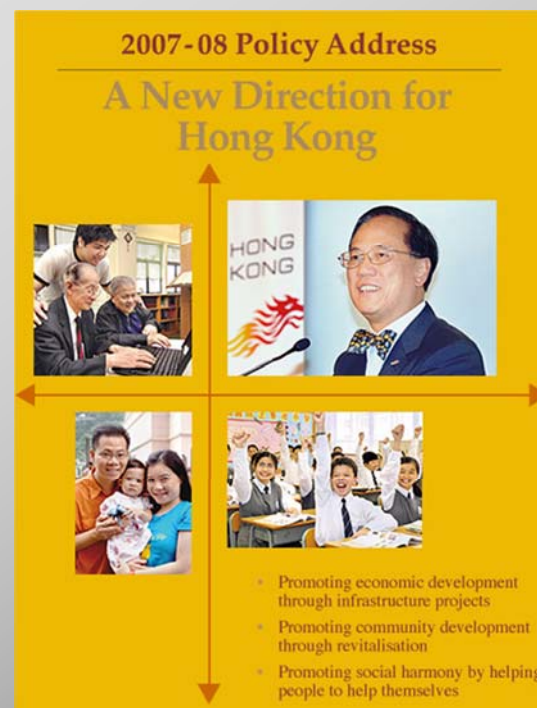
1. MTR Tsuen Wan, Kwun Tong and Island Line (1975 - 83)
2. MTR Tung Chung Line/Airport Express Line (1993 - 98)
3. MTR Quarry Bay Congestion Relief project (1997 - 2001)
4. MTR Tseung Kwan O Extension (1998 - 2002)
5. KCR West Rail (1998 - 2003)
6. KCR East Rail Extension – Ma On Shan line (1999 - 2004)
7. KCR East Rail Extension – Tsim Sha Tsui Ext. (2001 - 04)
8. KCR Lok Ma Chau Spur Line (2002 - 2006)
9. KCR Kowloon Southern Link (Linking E & W Rail, 2005-09)
10. MTR Kwun Tong Line Ext to Whampoa (2011 – 2016))
11. MTR Shatin to Central Link (2010 - 2019)
12. Express rail Link (2010 - 2019)

Highlight of some Major Recent Highway Projects

1. Widening of Castle Peak Road (2000 - 2007)
2. Construction of Truck Road 7 (MOS Bypass , 2001 – 2004)
3. Shenzhen Western Corridor and Deep Bay Link (2003 – 07)
4. Re-alignment and Improvement of Route 5 (2003 – 2007)
5. Construction of Route 8 (2003 – 2009)
6. Reconstruction and Improvement of Tuen Mun Road (2008 – 2014)
7. Widening of Tolo Highway/Fanling Highway
Phase 1 (2009 – 2014)
Phase 2 (2013 – 2019)
8. Central Wanchai Bypass (2010 – 2019)
9. HK-Zhuhai-Macao Bridge (2011 – 2019)

Major Recent Land Formation Projects

1. Penny Bay Reclamation
Phase 1: 2002 - 2004, HK\$10.5 billion
Phase 2: 2003 – 2008, HK\$1.1 billion
2. Tsing Yi South Reclamation and development of Container Terminal No. 9 (1998 – 2004)
3. Central Reclamation Phase 2 and 3 (1998 – 2008)
4. Choi Wan Site Formation (2001 – 2006)
5. Shui Chuen O Site Formation (2008 – 2012)
6. Anderson Road Site Formation (2008 – 2016)



二零零七至零八年施政報告

香港新方向

甲、引言

乙、十大建設 繁榮經濟

交通基建
跨界基建
都市新發展區
國際金融中心
經貿發展

丙、優質城市 優質生活

環境保護
文物保育
創意之都
安全生活

The 10 major infrastructure projects

Transportation Infrastructure

1. West Island Line and South Island Line
2. Sha Tin to Central Link
3. Tuen Mun Western Bypass & Tuen Mun-Chek Lap Kok Link

Cross-boundary Infrastructure Projects

4. Guangzhou-Shenzhen-Hong Kong Express Rail Link
5. HK-Zhuhai-Macao Bridge
6. HK-Shenzhen Airport Co-operation
7. HK-Shenzhen Joint Development of Lok Ma Chau Loop

New Urban Development Areas

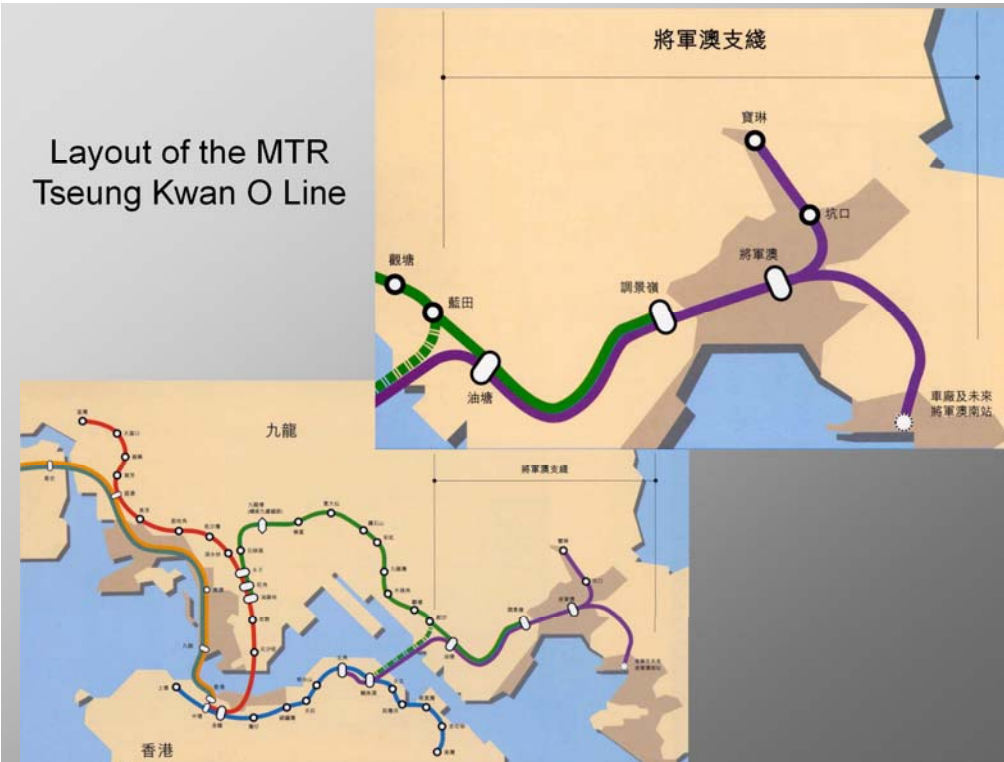
8. West Kowloon Cultural District
9. Kai Tak Development Plan
10. New Development Areas

Part 1

Major Railway Projects

MTR Tseung Kwai O Line (TKE)

Layout of the MTR Tseung Kwan O Line



Tseung Kwai O Line –
Formation of the Yau Tong Station

Aerial view showing the overall layout of
the Yau Tong Station and its vicinity



Yau Tong Station
as seen in the
construction stage



Tseung Kwai O Line –
Formation of the Tiu Keng Leng Station



Formation of Tiu Keng Leng Village to provide land for the Development of the Tiu Keng Leng Station Complex



Cutting a 450m x 60m x 30m deep trough into solid rock to form the buried structure of Tiu Keng Leng Station



The Station and its vicinity as seen in early 2002



Tseung Kwai O Line –
Formation of the Tseung Kwai O Station

Tseung Kwan O
Station located on
new land formed
by reclamation



Construction of the
Tseung Kwan O Station



Tseung Kwai O Line –
Formation of the Hang Hau Station

Layout of the Hang
Hau Station as
seen in early 1999



Tseung Kwai O Line – Formation of the Po Lam Station

Po Lam Station is the only station that built at-grade. The photo shown the early stage of station work



Gradual completion of the station's superstructure



Tseung Kwai O Line – Maintenance Depot of the TKE Line

MTR Tseung Kwan O Depot – residential development will be provided on top of the depot podium at a later stage



----->
Rail track for
MTR train
entering the
depot

Tseung Kwai O Line – Cut-and-Cover Tunnels

Cut-and-cover
tunnel between
Tseung Kwan O
and Hang Hau
Station



Typical formwork
arrangement (tunnel form)
for the construction of the
tunnel tubes



Some difficult situations in constructing the cut-and-cover tunnel – working in the reclaimed land very close to culvert and seawall



Tunnel portal provision at the Yau Tong Tunnel



KCR West Rail

Alignment of West Rail – Nam Chong to Tuen Mun



West Rail – Fast Fact

- West Rail Phase I is a 30.5-km domestic passenger railway linking Sham Shui Po in West Kowloon with Tuen Mun.
- It has nine stations, namely:
Nam Cheong, Mei Foo, Tsuen Wan west, Kam Sheung Road, Yuen Long, Long Ping, Tin Shui Wai, Siu Hong and Tuen Mun Station.
- Alignment type

enclosed structure at grade	3.1km
cut-and-cover tunnel	2.3km
surface alignment	2.3km
rock tunnel	9.1
viaduct	13.5
- Capacity of serving 500,000 passengers per day.
- Estimated project cost is \$46.4 billion (Original \$64 billion as in 1996 estimate)

West Rail – Nam Cheong Station

Construction Features

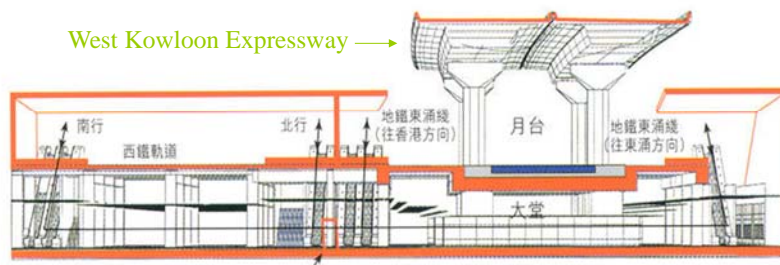
- Enclosed structure, measure about 350 x 80m
- Partially constructed underground
- Part of the station concourse have to pass under the Airport Railway track
- Interchanging station with Tung Chung Line
- Public transport interchanging facility provided



West Rail – Nam Cheong Station



West Kowloon Expressway →



West Rail – Nam Cheong Station

Western and Eastern Concourse of
Nam Cheong Station



West Rail – Cut-and-cover Tunnel between Nam Chong and Mei Foo Station

Tunnel backfilled to provide integrated landscape



Traveling type tunnel formwork to construct the tunnel section

West Rail – Mei Foo Station

Construction Features

- Enclosed structure, measure about 260 x 35m
- Partially constructed underground
- Station bisected by the Kwai Chung Road
- Station integrated into future Lai Chi Kok Park
- Interchanging station with MTR Tsuen Wan Line
- Connecting to on-grade cut-and-cover tunnel on north and entering the Tsing Kwai Tunnel on the south end of station
- Complicated connecting pedestrian tunnels into MTR Mei Foo Station

West Rail – Mei Foo Station



West Rail – Mei Foo Station

Temporary footbridge erected to maintain pedestrian traffic to Princess Margaret Hospital



Early stage of station construction in early 2000

West Rail – Mei Foo Station



Station structure passing through Kwai Chung Road

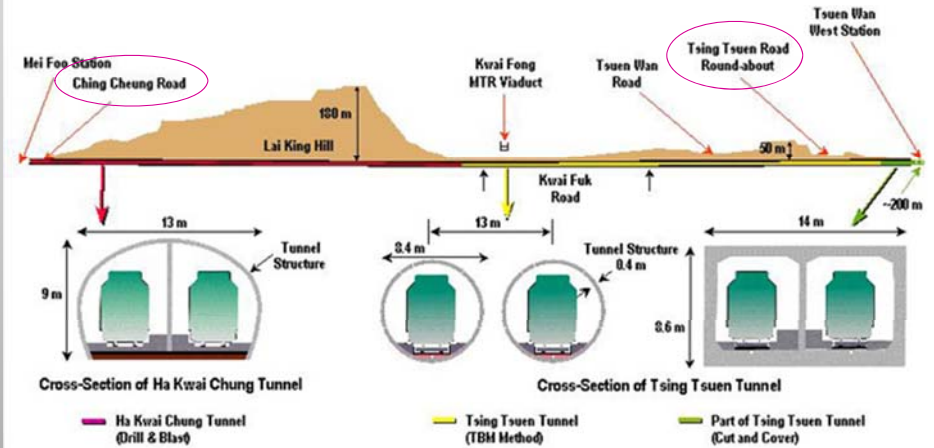


West Rail – Tsing Kwai Tunnel

Kwai Tsing Tunnels – 3.6 km

- Ha Kwai Chung Tunnel (1.7 km)
- Tsing Tsuen Tunnel (1.78 km)
- Tsing Tsuen Cut-and-Cover Section (0.12 km)

Location of major Tunnel Portal



West Rail – Tsing Kwai Tunnel

Construction Features

- Total length about 3.6 km
- The 1st section from Mei Foo to Lai King, about 1.7 km long, constructed using drill-and-blast method
- The 2nd section from Lai King to Tsuen Wan is about 1.8 km long, constructed using a 8.4m dia. mix-mould tunnel boring machine (TBM)
- A 50m dia. access shaft is provided at Lai King to facilitate the dismantling of the TBM upon its completion of the drilling from Tsuen Wan direction.
- The TBM has been used twice, forming the east and south bound tube in two separated journeys from Tsuen Wan direction to Lai King

Tsing Kwai Tunnel Service Shaft at Lai King

The Breaking Through of the TBM at Lai King Shaft – the machine would then be dismantled and transported back to Tsuen Wan Portal for re-assembly and prepare for the drilling of the second tube



West Rail – Tsing Kwai Tunnel Portal at Tsuen Wan

Waterside Plaza

Wing Shun Street Diversion

Alignment of cut-and-cover tunnel



Tsing Kwai Tunnel Portal at Tsuen Wan

Early stage of portal
formation before excavation



The Paul Y Industrial Bldg.
being demolished to give
way for the Tsing Kwai
Tunnel

A shaft measured about
220 x 35 x 25m deep was
formed as portal to support
the tunnel drilling process.



West Rail – Tsing Kwai Tunnel Tunnel Lining

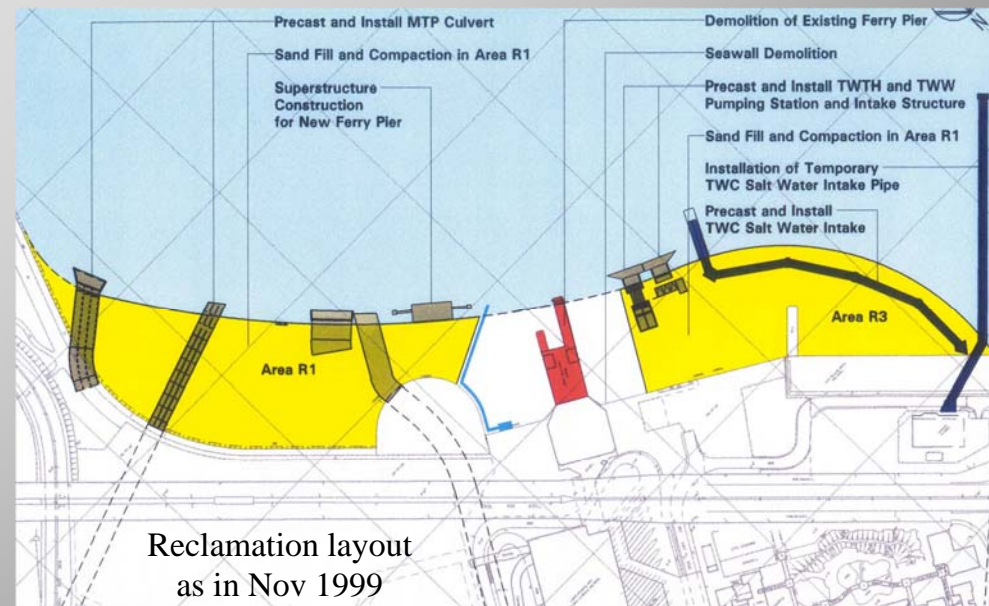
Tunnel Lining
formed by precast
lining units

Conveyor system
for spoil removal

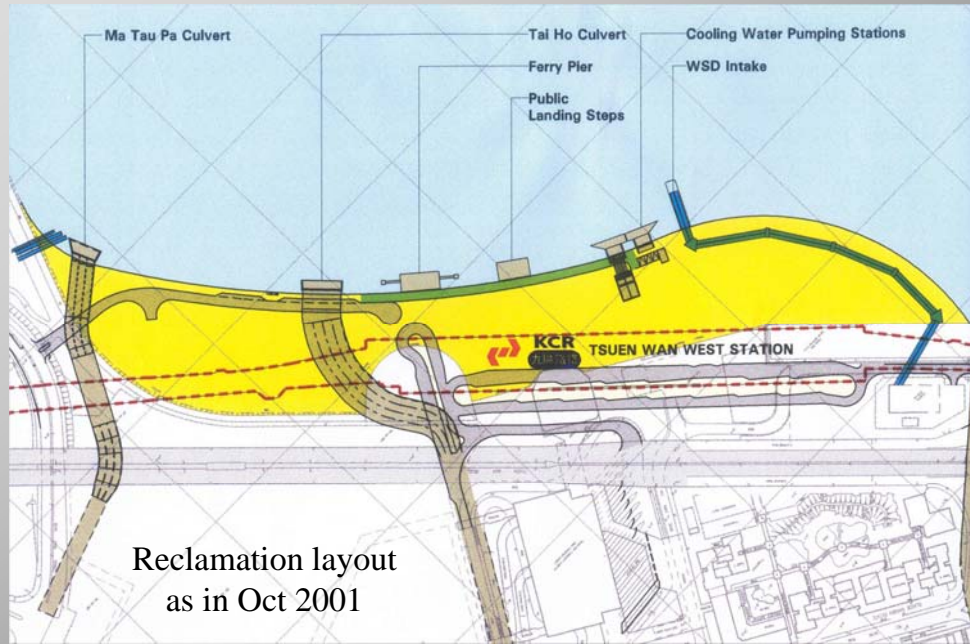
Tunnel tube
entering into the
portal of Kwai
Tsing Tunnel at
Tsuen Wan West



West Rail – Tsuen Wan Reclamation



West Rail – Tsuen Wan Reclamation



Previous Tsuen Wan Public Pier

Ma Tau Pa Culvert

West Rail – Tsuen Wan Reclamation

Stage I Reclamation work in mid 1999

Wing Shun Street diversion



West Rail – Tsuen Wan Reclamation

Formation of Box Culvert

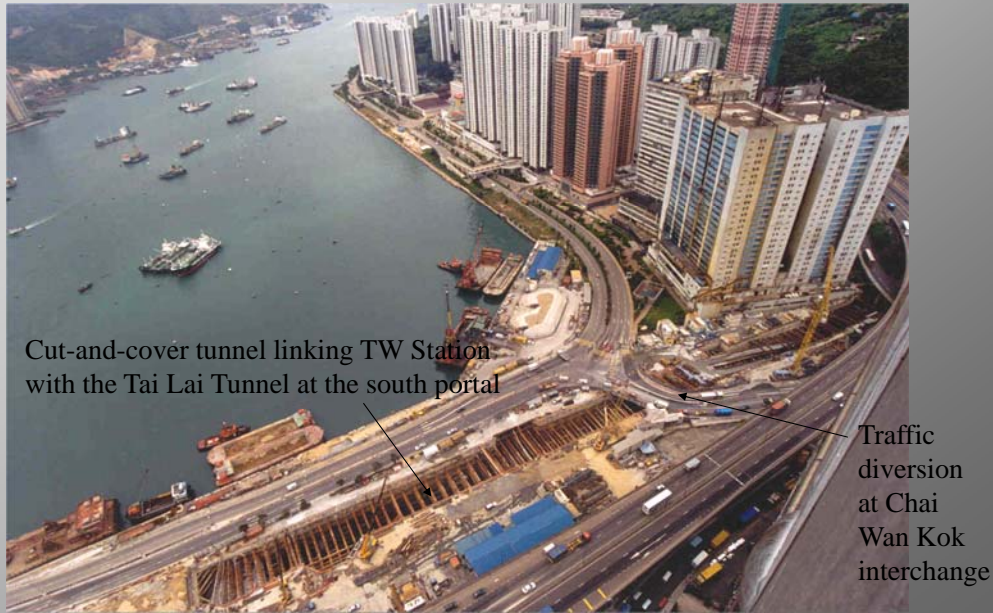
Tsuen Wan before reclamation

Reclamation work in late 1999

Touching up of the precast culvert and connect the structure into existing system



West Rail – Cut-and-Cover Tunnel and Traffic Diversion at Tsuen Wan



West Rail – Tsuen Wan West Station

Construction Features

- Mainly underground structure, measure about 380 x 40m
- Constructed on newly reclaimed land
- Public transport interchanging facility provided
- Complicated diversion works are incorporated in the construction process



West Rail – Tsuen Wan West Station



West Rail – Tsuen Wan West Station

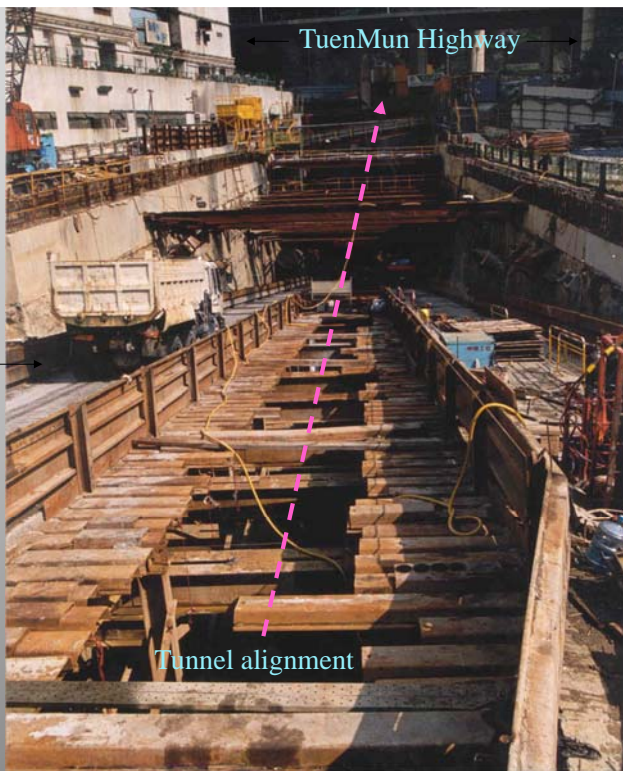


Station structure constructed using bottom-up method as seen in June 2001



Tai Lam Tunnel South Portal at Chai Wan Kok

Access ramp
complete allowing
vehicle entering into
the tunnel for spoil
removal



West Rail – Tai Lam Tunnel North Portal at Pat Sheung



West Rail – Tai Lam Tunnel Construction using Blast & Drill

Forming the tunnel lining
using in-situ method



Crusher &
Conveyor
system for
spoil
removal



West Rail – Depot at Pat Sheung

Construction
of the Depot
structure as in
early 2000





Depot at Pat Sheung

Construction of the Depot structure as in August 2001



West Rail – Kam Sheung Road Station

Construction Features

- Elevated structure, measure about 280 x 30m
- Connected to both ends by viaduct
- with trunk tracks leading to maintenance depot at Pat Sheung
- Parking and public transport interchanging facility provided to convenient passenger to use the rail instead of using private vehicle



West Rail – Kam Sheung Road Station



West Rail – Kam Sheung Station



Outlook of the station as in May 2001





Viaduct section
between
Kam Sheung &
Yuen Long Station

Viaduct section
outside Kam Sheung
Station with tracks
leading to the
Maintenance Depot



West Rail – Yuen Long Station

Construction Features

- Elevated structure, measure about 420 x 40m
- Part of the station structure constructed over wetland of Yuen Long Plain
- Connected to both ends by viaduct
- Interchanging provision to Light Rail
- Public transport facilities also provided

Sun Yuen Long Centre



West Rail –
Yuen Long Station

The station
structure as seen
in August 2001



Construction of the
portal frame to
support the viaduct

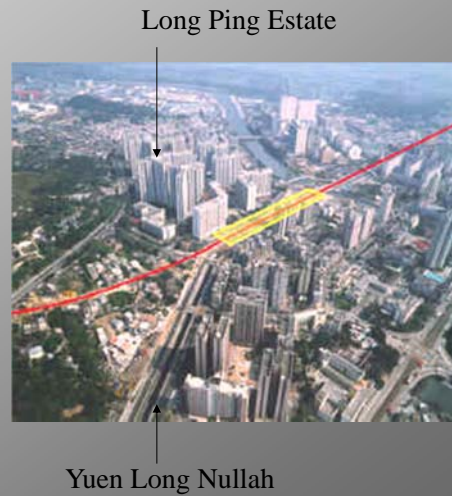
West Rail –
Viaduct Section
between
Yuen Long and
Long Ping Station



West Rail – Long Ping Station

Construction Features

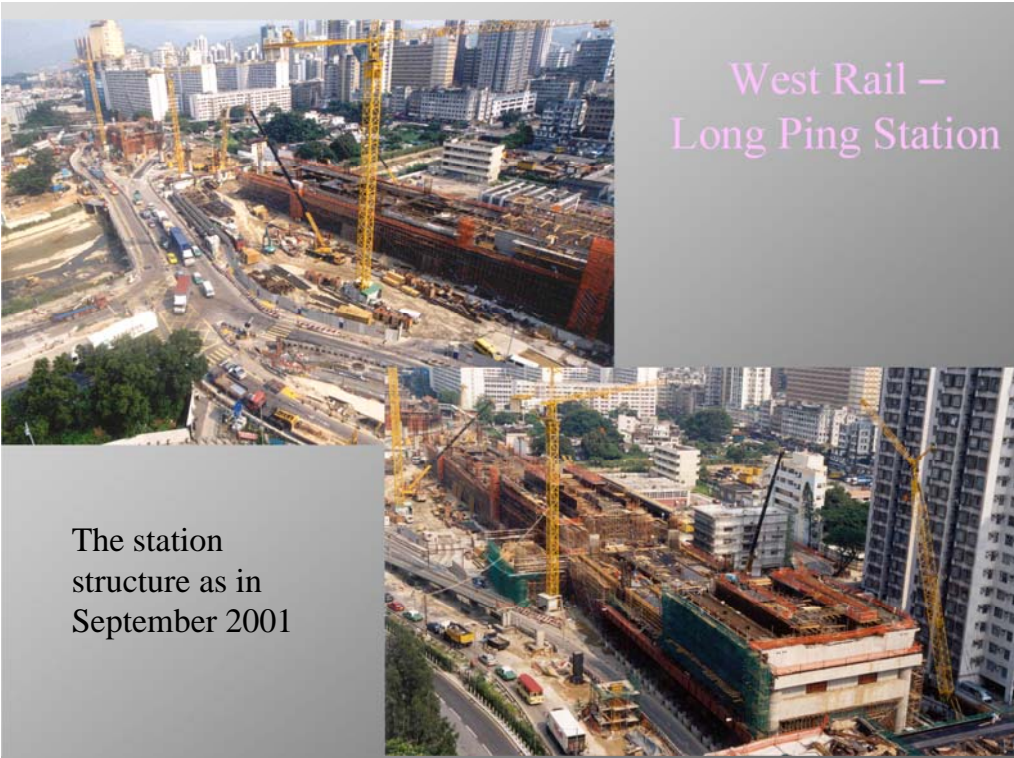
- Elevated structure over Yuen Long Nullah, measure about 380 x 30m
- Large area of glazed panel for wall & roof are used to provide natural lighting and to improve orientation
- Connected to both ends by viaduct
- public transport interchanging facility provided



West Rail – Long Ping Station



West Rail – Long Ping Station

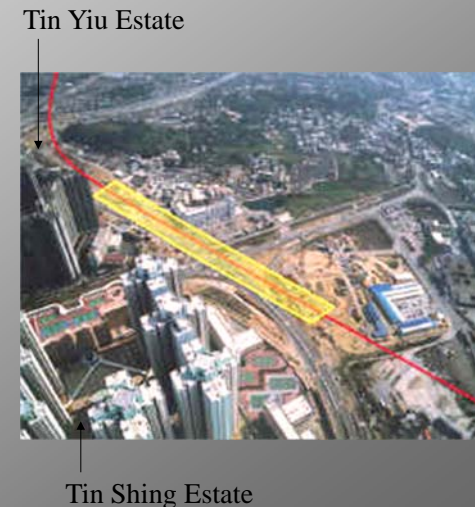


The station structure as in September 2001

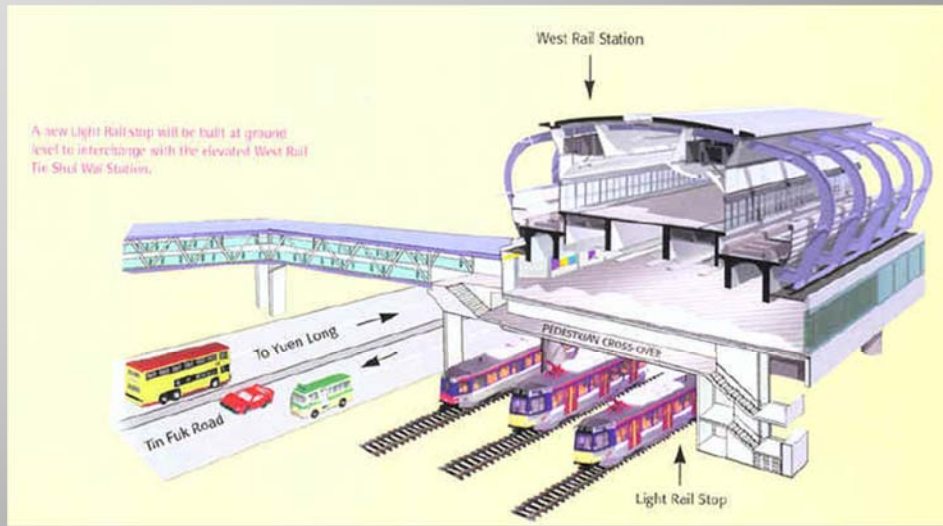
West Rail – Tin Shui Wai Station

Construction Features

- Elevated structure at junction of Ping Ha Road & Tin Fuk Road
- Station structure measured about 460 x 30m
- New Light Rail stop is to be built at ground level under station concourse
- Structure cast in 2 main sections to minimize interruption to existing busy traffic junction at Ping Ha Road



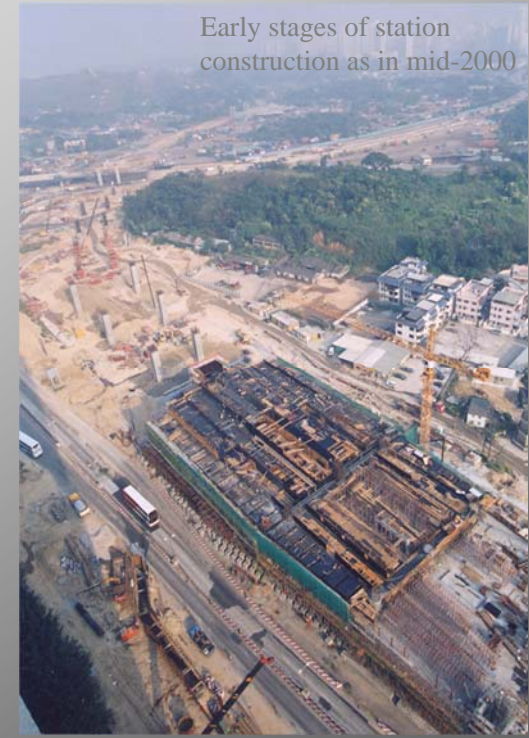
West Rail – Tin Shui Wai Station



West Rail – Tin Shui Wai Station



Early stages of station construction as in mid-2000



West Rail – Tin Shui Wai Station



West Rail – Siu Hong Station

Construction Features

- Elevated structure over Tuen Mun Nullah
- Structure measured about 440 x 55m
- Construction using a suspended gantry form in repeated sections
- major interchange station with the Light Rail.
- Elevated public transport interchanges will be provided at either end of the station concourse.

Siu Hong Court



West Rail – Siu Hong Station



West Rail – Siu Hong Station

Construction of the station structure as in early 2001



West Rail – Siu Hong Station



Close up of the gantry form to construct the station deck

West Rail – Tuen Mun Station

Construction Features

- **Elevated structure over Tuen Mun Nullah**
- **Structure measured about 370 x 50m**
- **A public transport interchange will be provided at the site of the existing San Fat Estate at ground level**
- **serve as an interchange station between West Rail and the Light Rail**

San Fat Estate – to be demolished to provide public transport interchange facilities



West Rail – Tuen Mun Station



Tuen Mun Station under construction as in 2002



KCR East Rail Extensions – Tsim Sha Tsui Extension

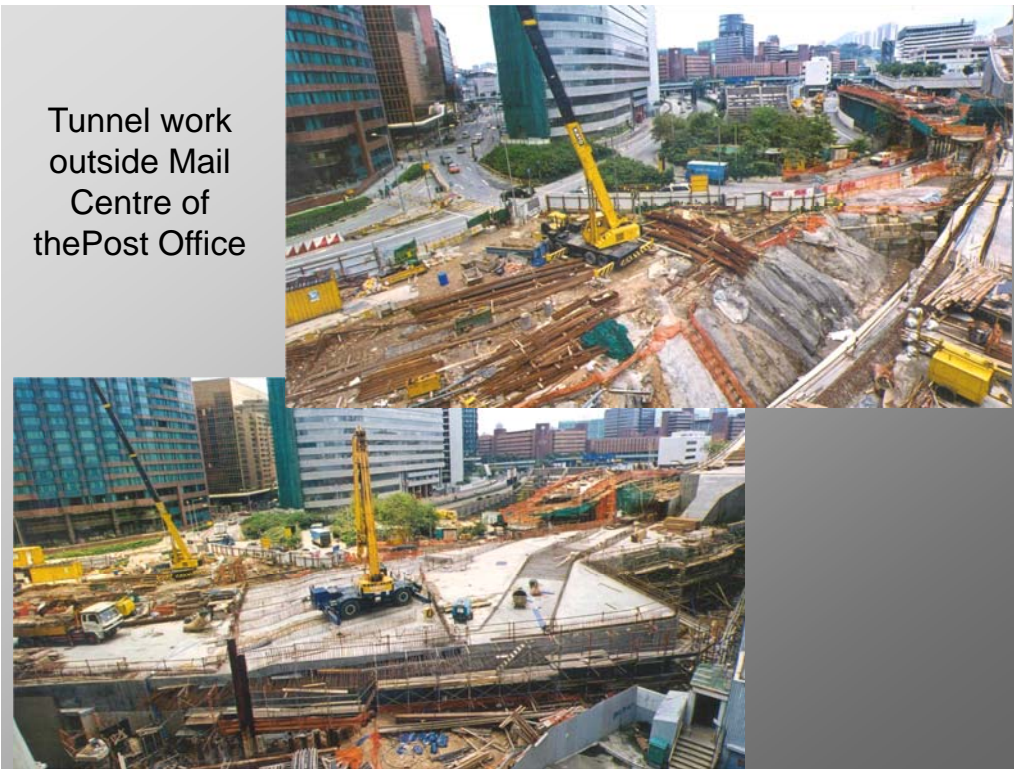
Tsim Sha Tsui Extension alignment running basically
alongside the Salisbury Road at the coast of TST East



Track within covered tunnel coming from the KCR Kowloon Station at Hung Hom



Tunnel work outside Mail Centre of the Post Office



Cut-and-cover tunnel between Kowloon and Tsim Sha Tsui Station



Tsim Sha Tsui Station



Tsim Sha Tsui Station and the nearby road condition as in mid 2002

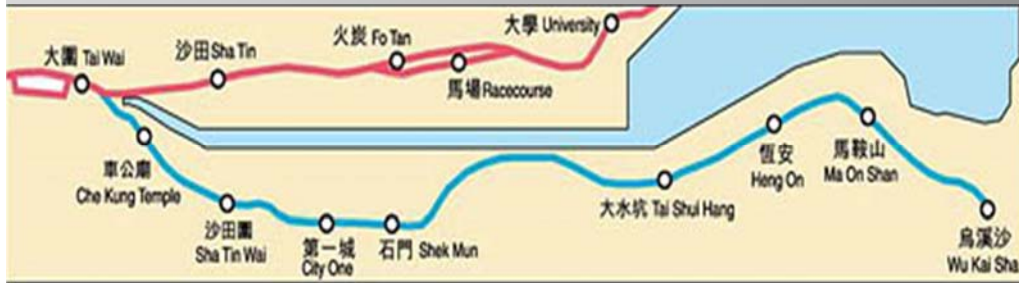


Tsim Sha Tsui Station and the Salisbury Road Underpass working at the same time as in mid 2003



KCR East Rail Extensions –
Ma On Shan Line

Alignment of the KCR Ma On Shan Line



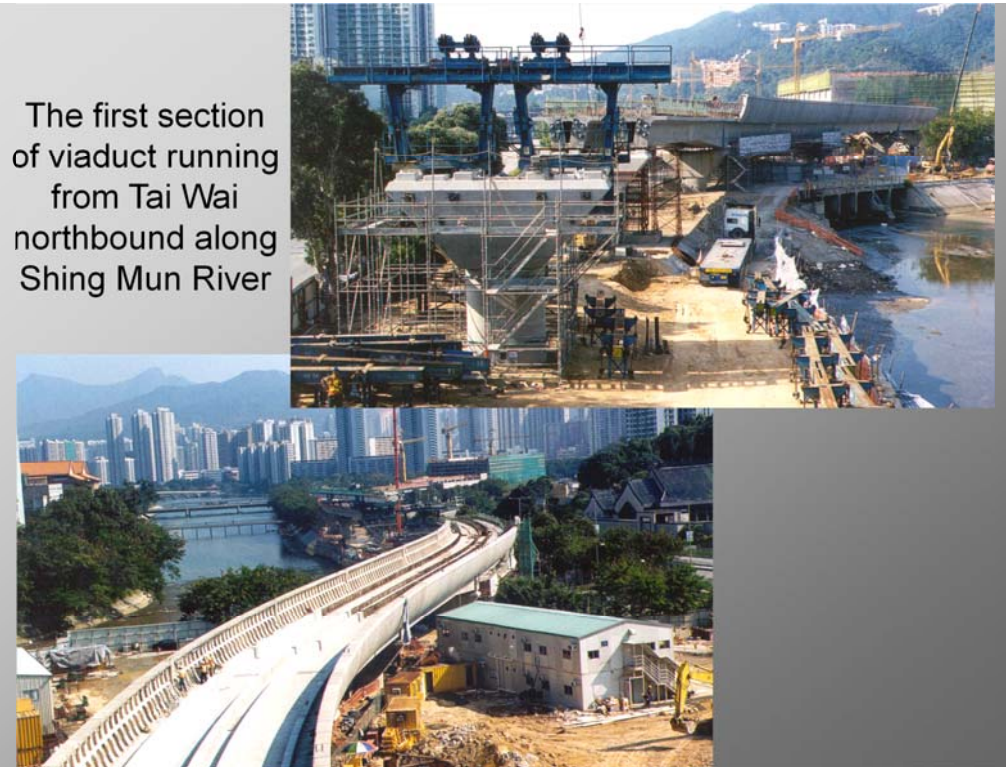
Ma On Shan Line joining East Rail at Tai Wai Station



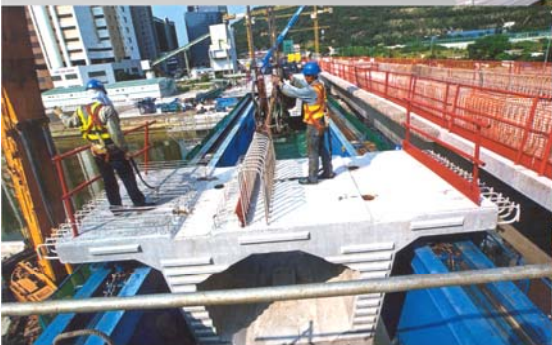
Service Depot of the MOS Line located in Tai Wai



The first section of viaduct running from Tai Wai northbound along Shing Mun River



Installing the box-girder viaduct using a gantry type launching machine



Forming the piers and portal beams for the supporting of the viaduct



Construction of other Stations along the Line



Hang On Station

Sha Tin Wai Station

Laying of track





Noise Barrier and
Noise Covering Hood



Ma On Shan (above) and
Tai Shui Hang Stations



Tai Wai Depot
(above) and Cha
Kung Mui Station



South Island Line

Population including Southern and Western HK is about 0.32m. There is a strong demand to provide a new metro line to serve the District.

The Executive Council has given the approval to the MTR Corporation Limited for the construction of the South Island Line. Construction of the 7 Km rail line will start in 2011 and cost more than \$7 billion.

Other data regarding Western Island Line:

Obtain approval from government – October 2007

Expect time to obtain the final authorization under Railway Ordinance and other legislation procedure – early 2010

Commence detail design – 2009-2011

Commencement of construction – 2011

Completion for operation – late 2016

South Island Line (East)



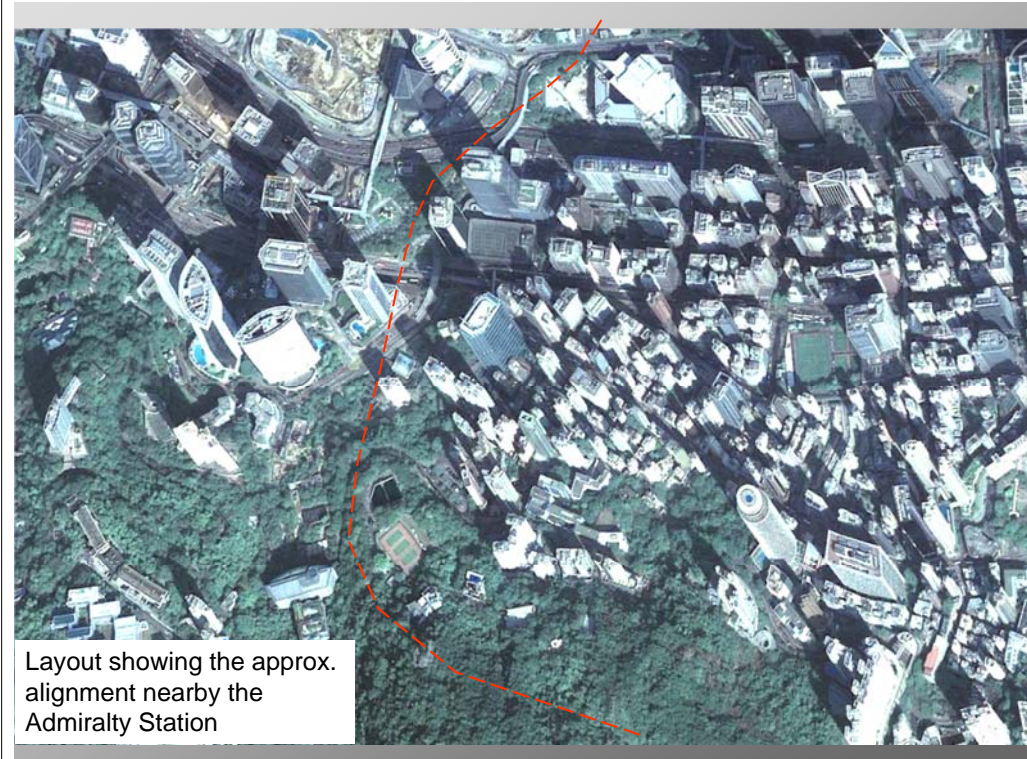
South Island Line (East)

南港島綫(西段) South Island Line (West)



South Island Line (West)

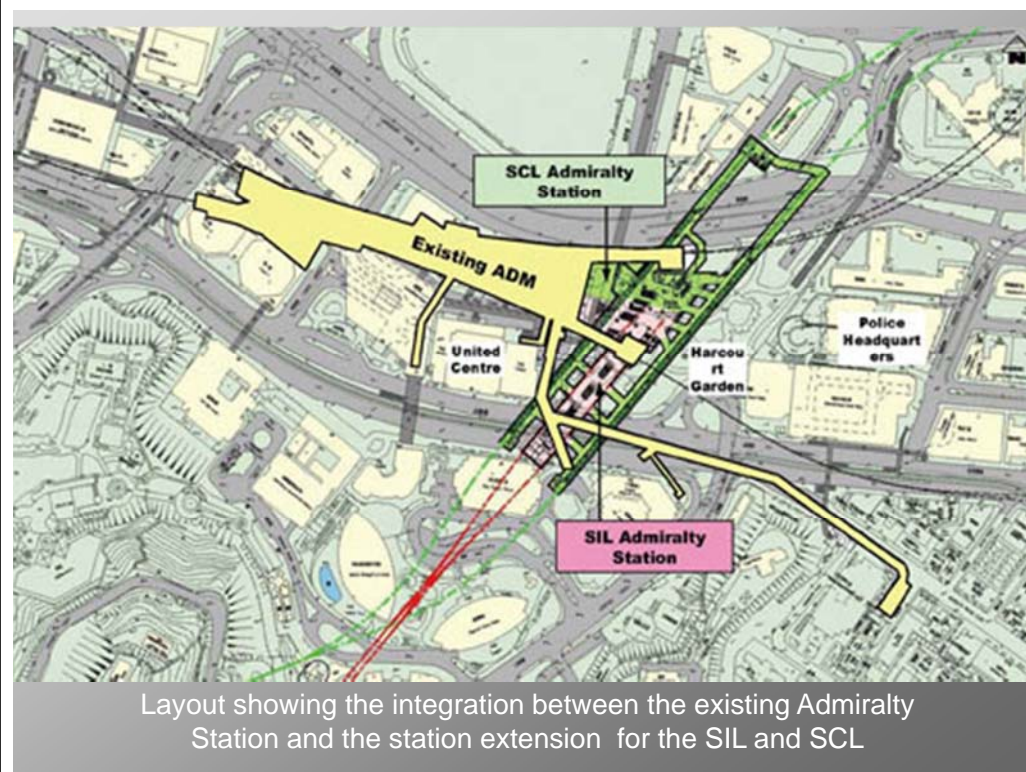
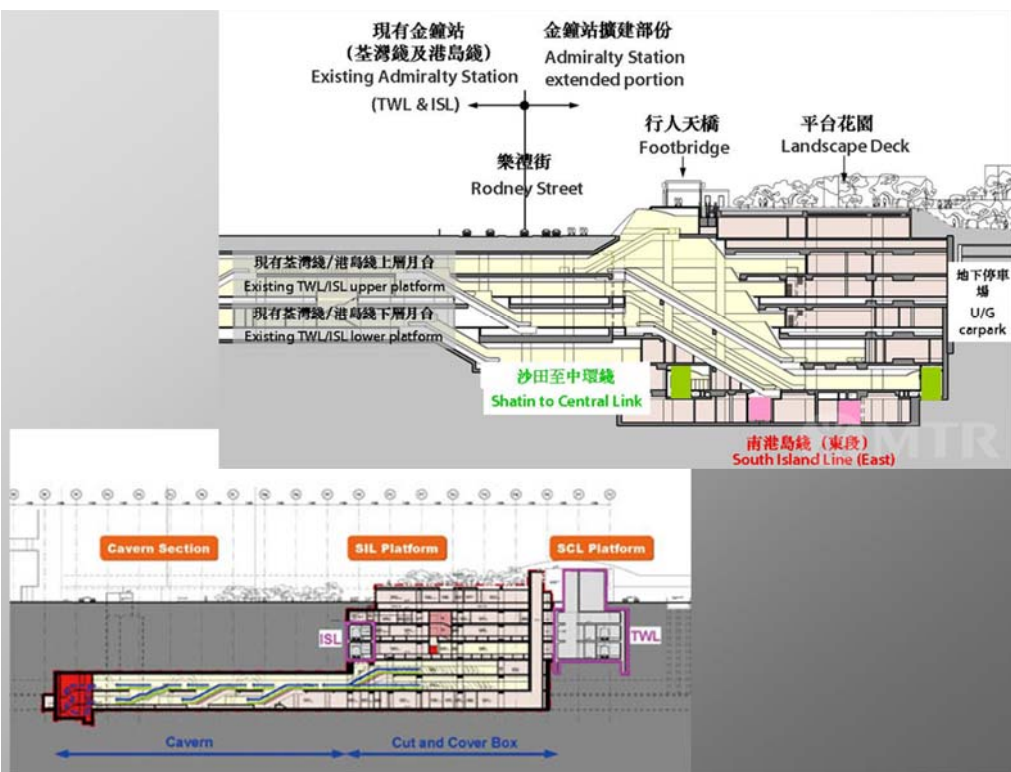
Construction of the Admiralty Station



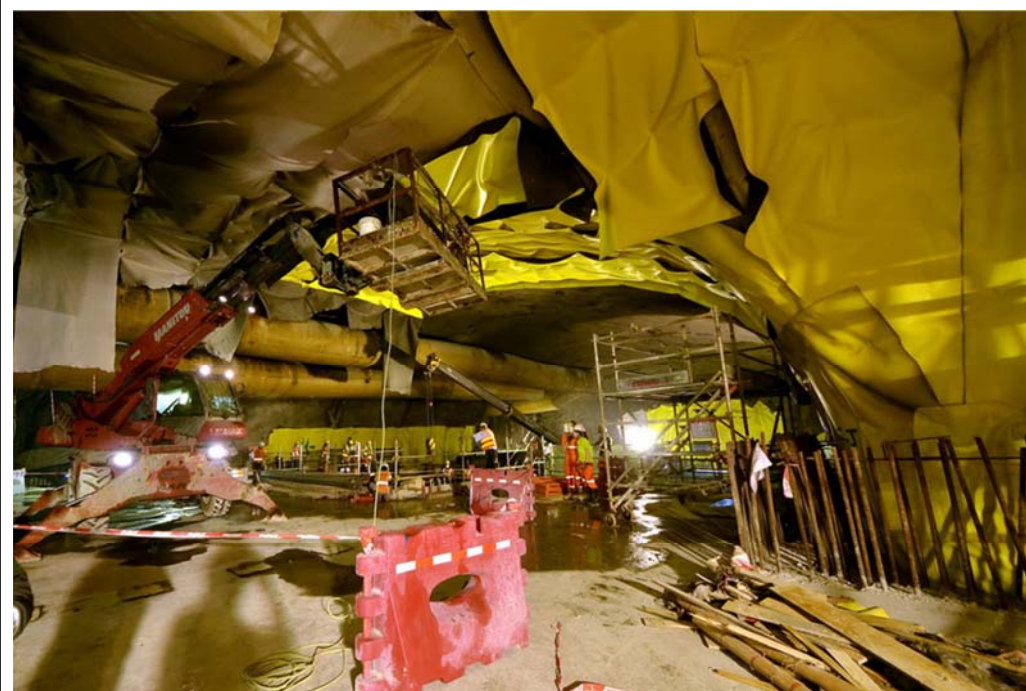
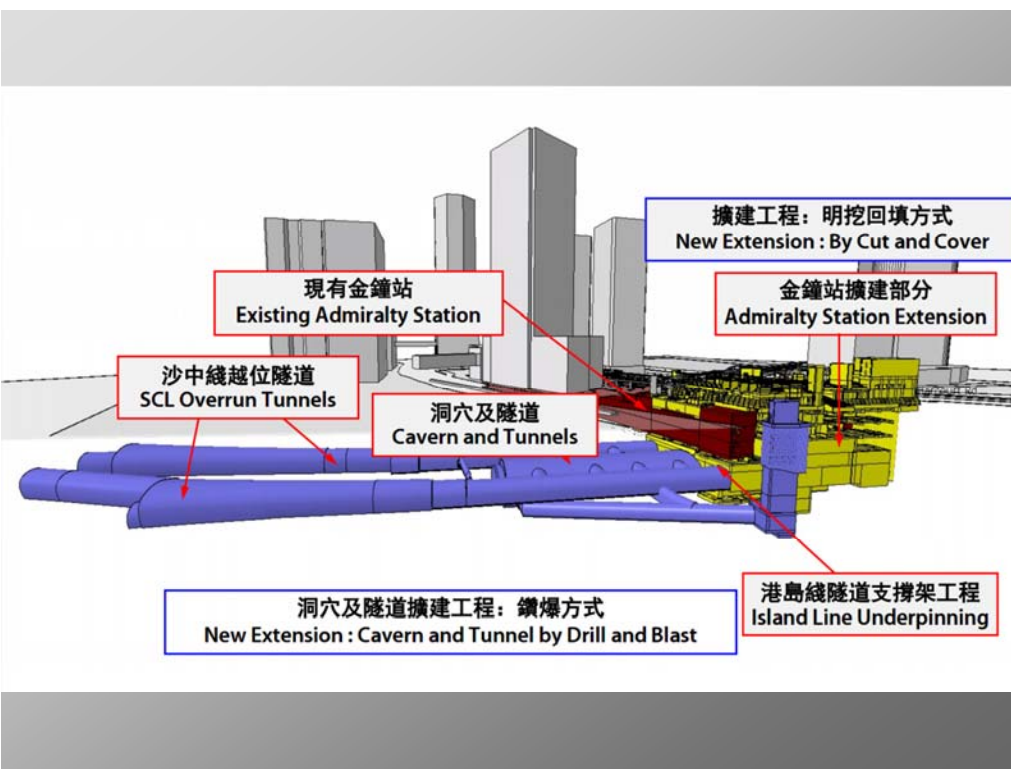
Layout showing the approx. alignment nearby the Admiralty Station

Early stage of work for the SIL Admiralty Station – formation of the previous Harcourt Garden into the work site

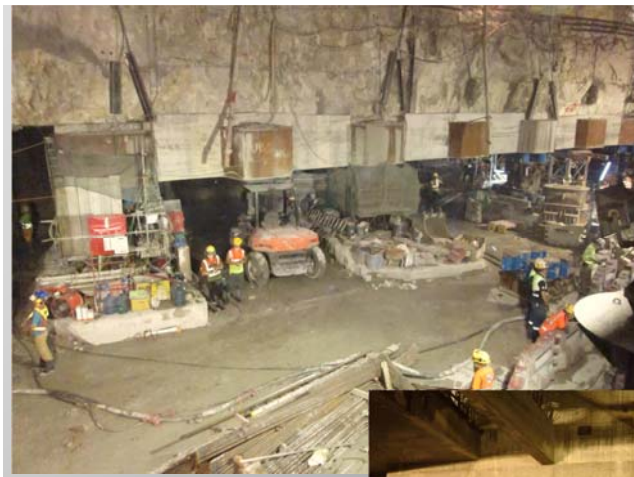




Layout showing the integration between the existing Admiralty Station and the station extension for the SIL and SCL



Fixing the water-proofing membrane before laying the concrete lining for the cavern chamber

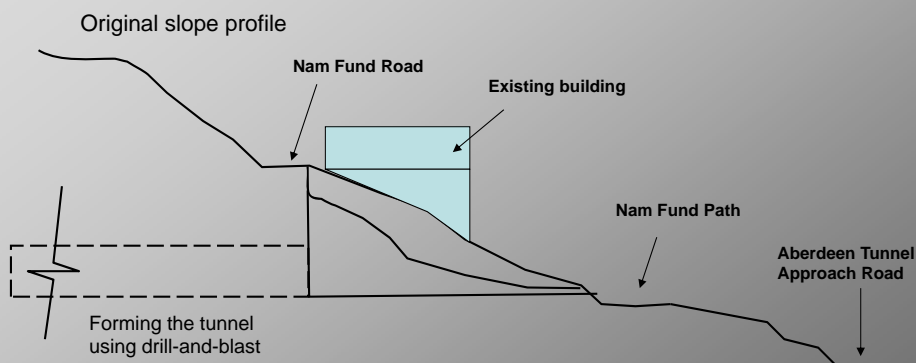


Underpinning work to support the servicing Island Line Tunnel



Illustration of the future SIL Admiralty Station (Main Entrance at Rodney Street)

Mount Cameron Tunnel portal near the toll Plaza of Aberdeen Tunnel



Formation of the tunnel portal underneath Nam Fung Road



Formation of the tunnel portal underneath Nam Fung Road



Typical view inside tunnel seeing the construction set-up





Tunnel immediately connecting to the viaduct crossing the Aberdeen Tunnel toll plaza



Toll Plaza of the Aberdeen Tunnel



Re-aligning the Wong Chuk Hang Nullah



Nullah section situated under the WCH Station





Integrating all the related facilities including the nullah re-alignment, buried service, traffic interchange and pedestrian facilities at the final stage of work

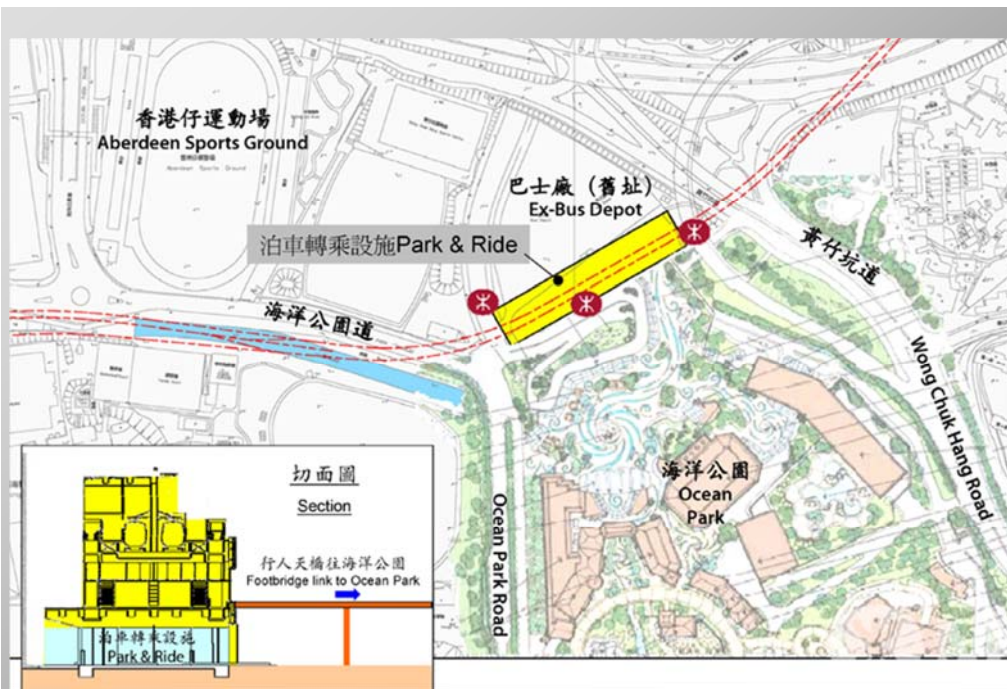


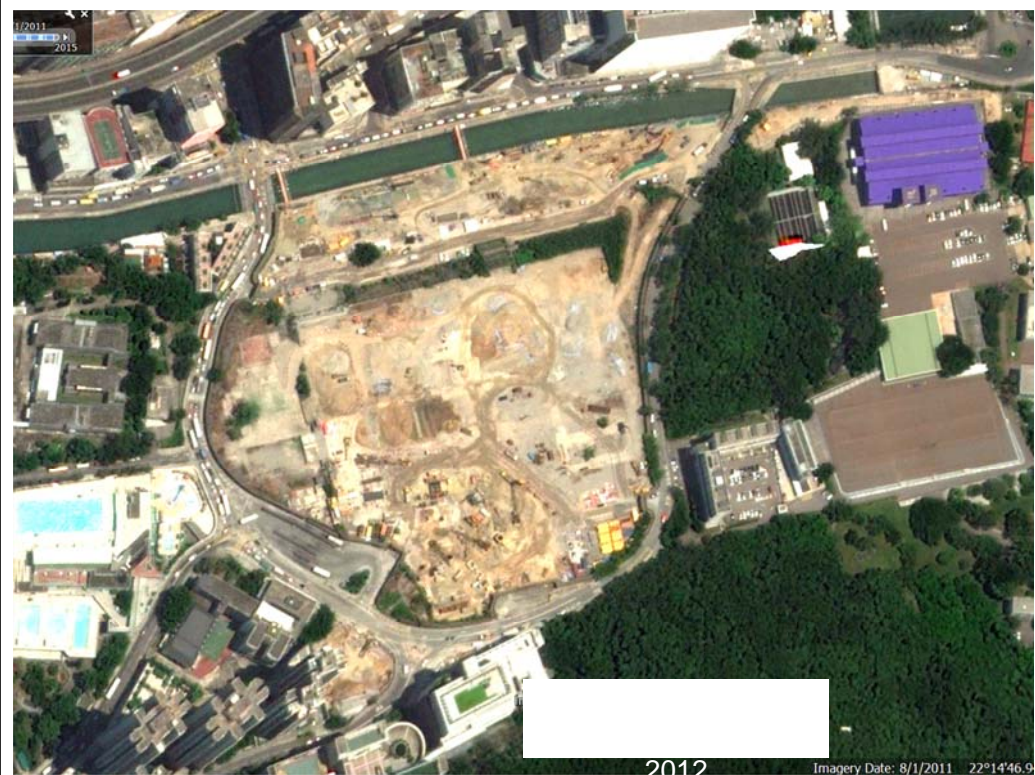
Viaduct from Mount
Cameron tunnel portal to
WCH Station

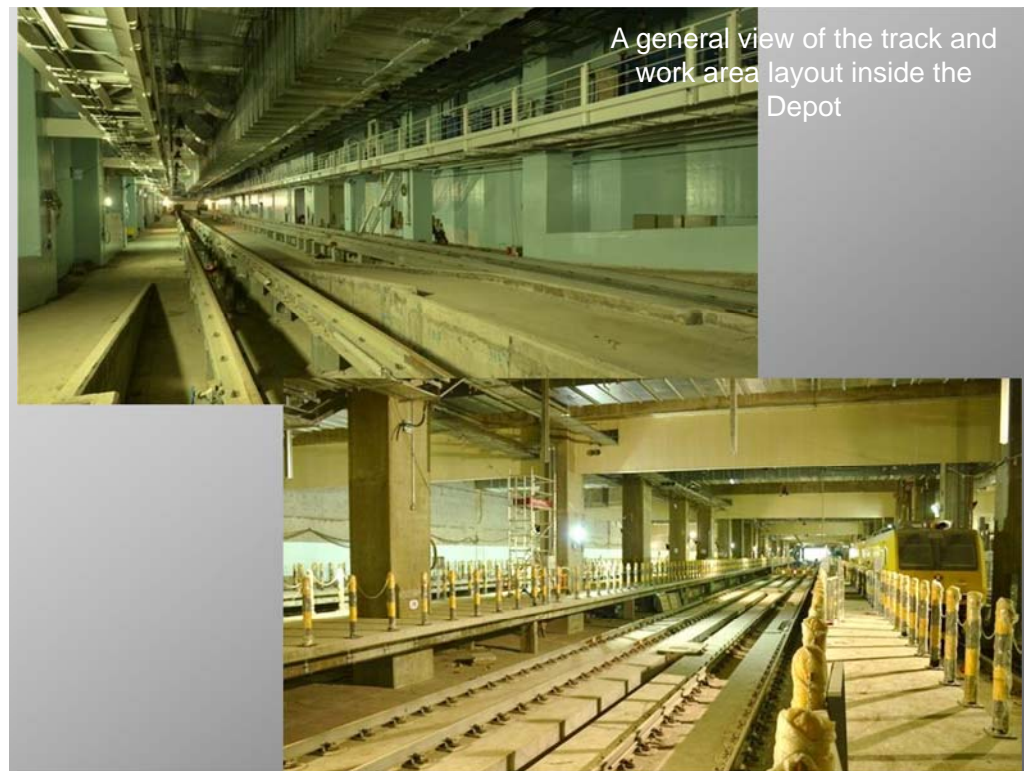
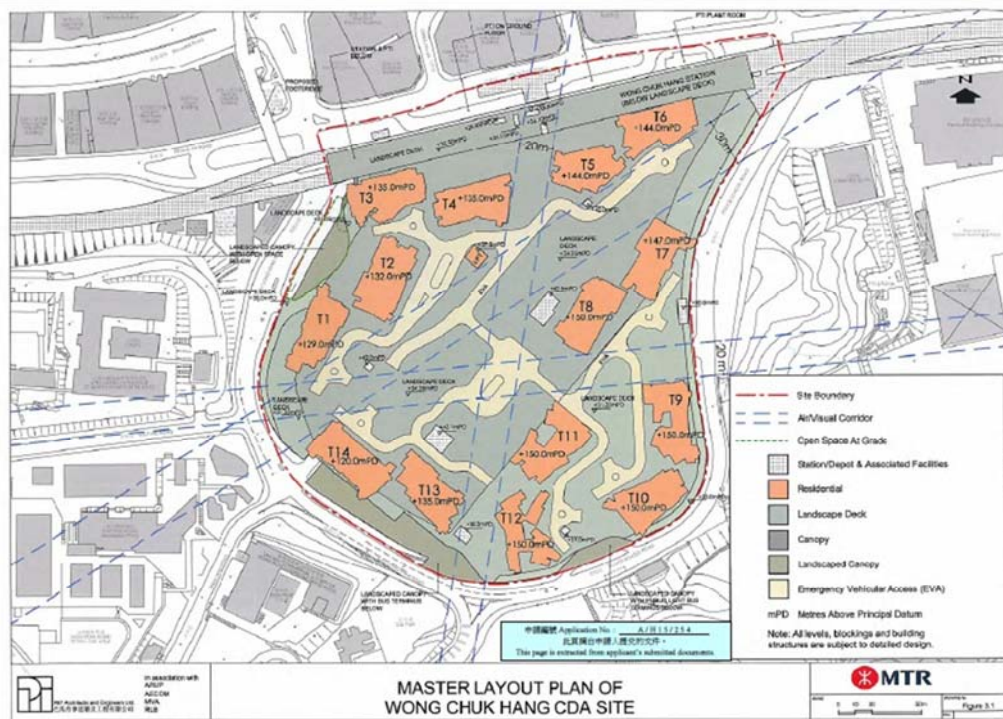




Construction of
Ocean Park and WCH stations







Construction of the WCH Station





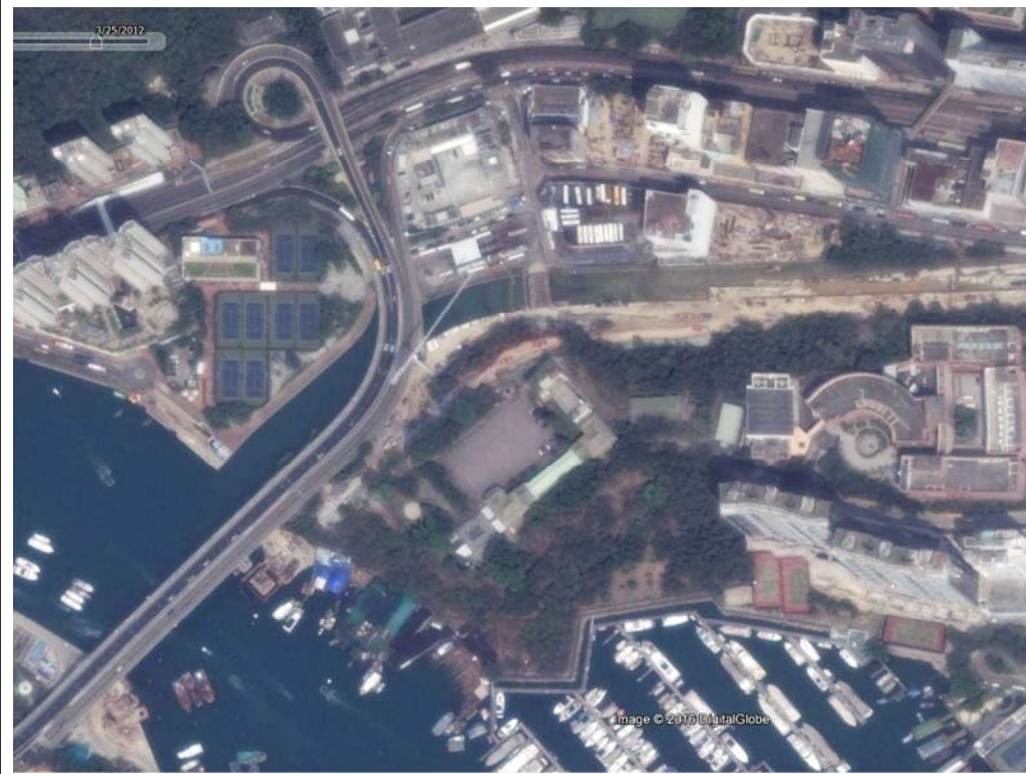
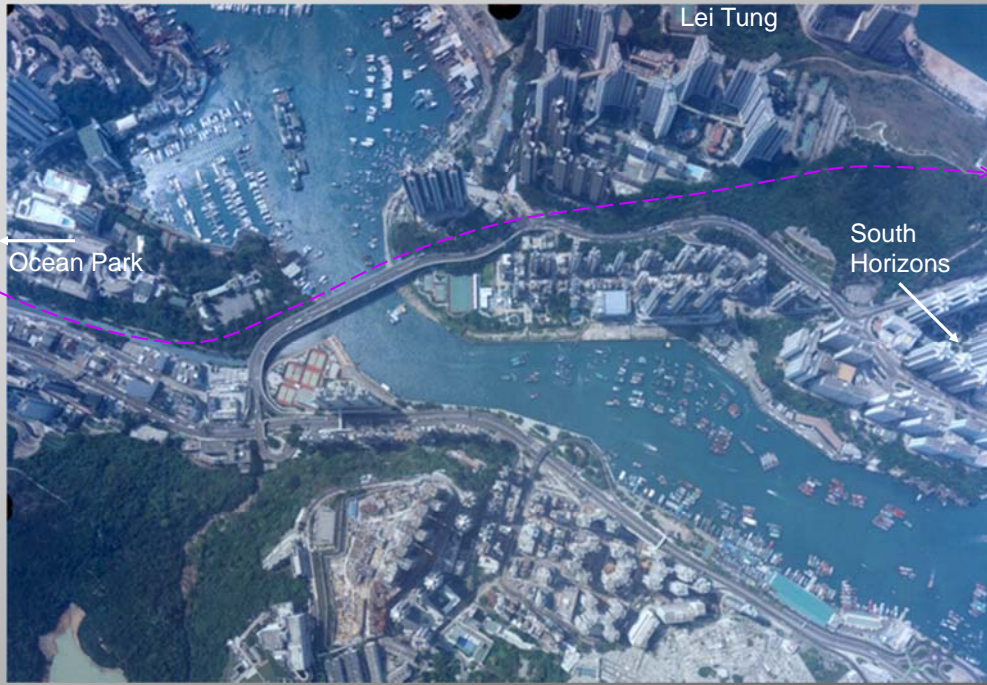
The structure of the
WCH Station as seen
in December 2013



Final stage of the station
work as seen in mid 2015



Viaduct from WCH
Station to the ALC
Channel



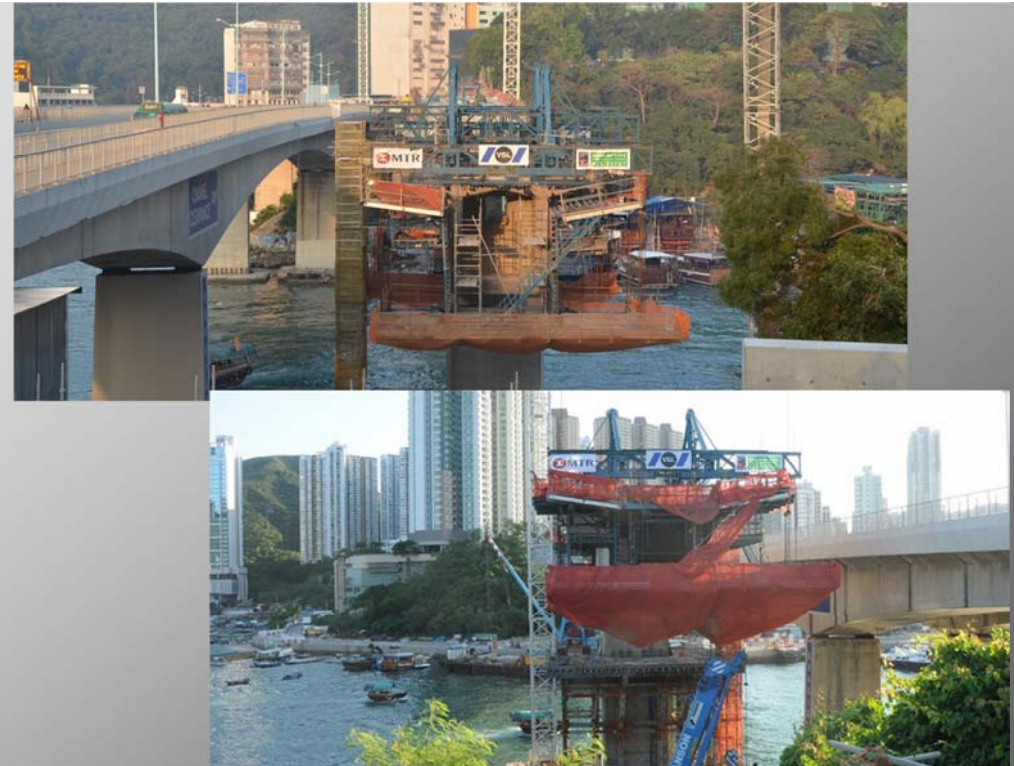
The viaduct for the track linking between the Wong Chuk Hang Station and the Ap Lei Chau Link Bridge





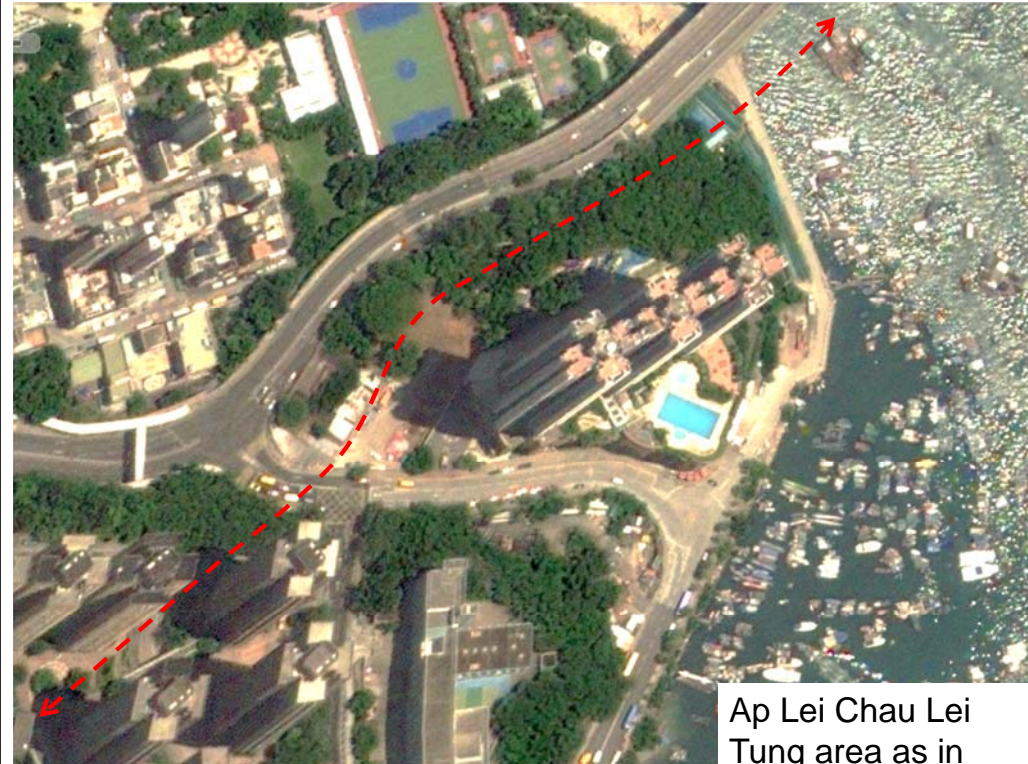
The elevated viaduct along the Wong Chuk Hang Nullah

The link bridge crossing the Ap Lei Chau Channel





Section of rail track landing to the Ap Lei Chau



Ap Lei Chau Lei Tung area as in



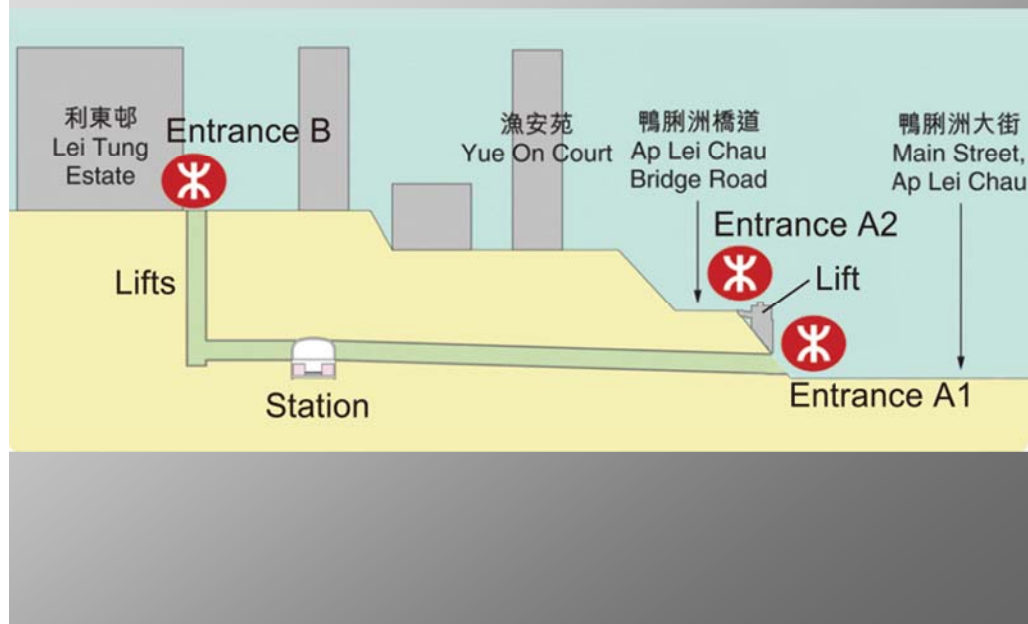
Lei Tung, South Horizon
stations and other associated
works



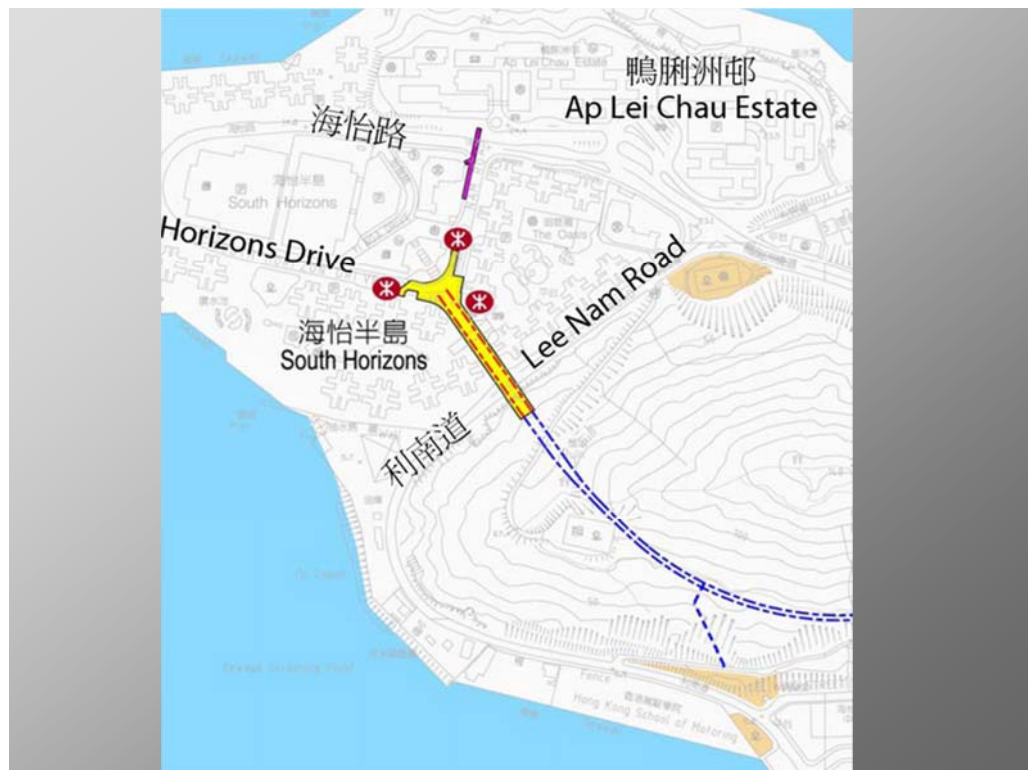
Portal section leading to the Lei Tung Tunnel

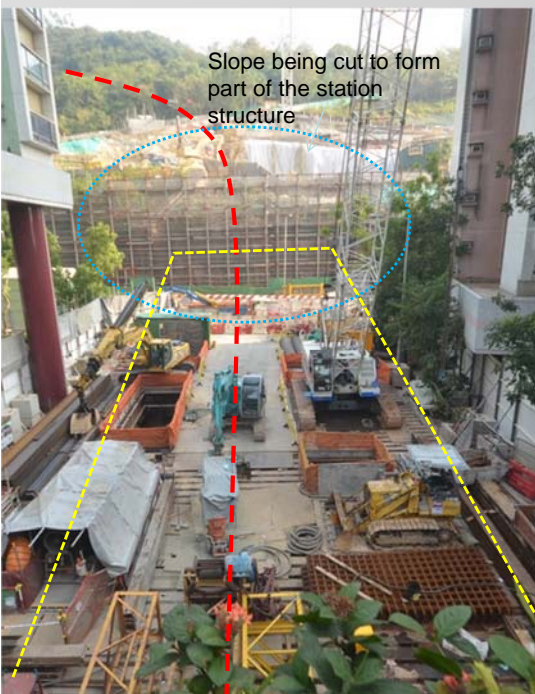
Lei Tung Estate

Ap Lei Chau Link Bridge



Pedestrian subway leading to Lei Tung Station in the form of a rock cavern





Tunnel coming from Lei Tung Station



----- Approx. layout of SH Station



One of the station exit of the South Horizon Station

West Island Line

Background

For the over 200,000 population working and living in the Western District of Hong Kong, only buses and mini-buses are served as means of public transport. It is particularly inconvenient for commuters who are suffering from the frequent traffic jam during peak hours. As a result, residents of the Western District, members of the Central & Western District Council and the Legislative Council have urged strongly for the construction of the West Island Line.

In response to this, the Government decided to proceed with detailed planning and preparations for the West Island Line in June 2005. The MTR Corporation submitted an updated proposal for the West Island Line to the Government in August 2006, setting out the detailed scope, cost and implementation program for the project for government's review.



MTR West Island Line alignment

West Island Line runs across the densely populated areas of Western District on the Hong Kong Island. It is so designed that over 90% of the residents can access to the new railway stations on foot when the line being completed.



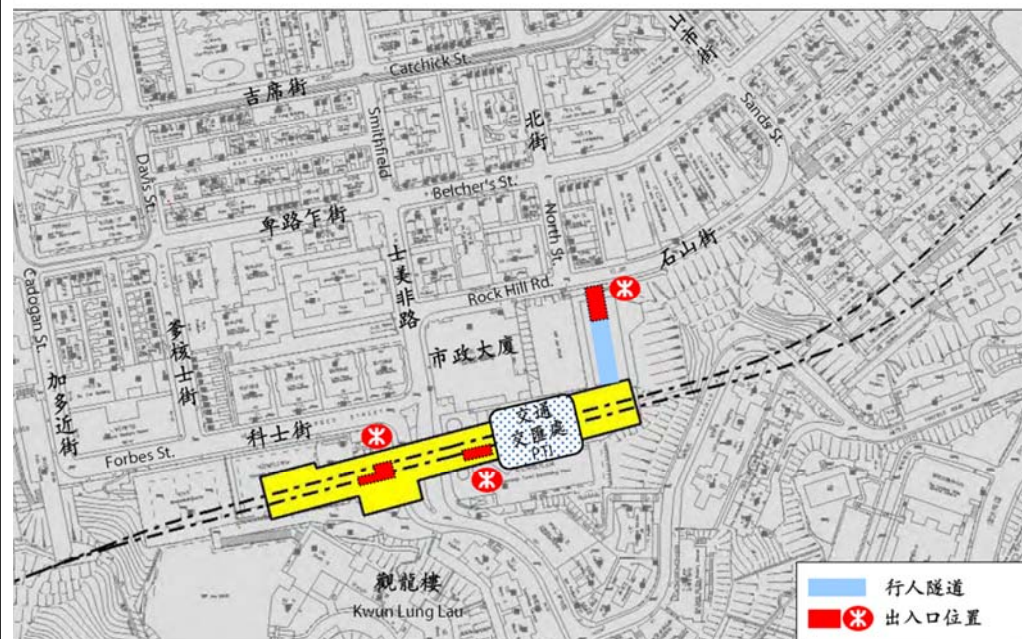
Future connection of the South Island Line (at the rear of Victoria Peak)

Existing Island Line

The approximate alignment of the West Island Line

The approximate location of the underground stations (from left to right, the connecting station, Sai Ying Pun, University and Kennedy Town stations)

Kennedy Town Station



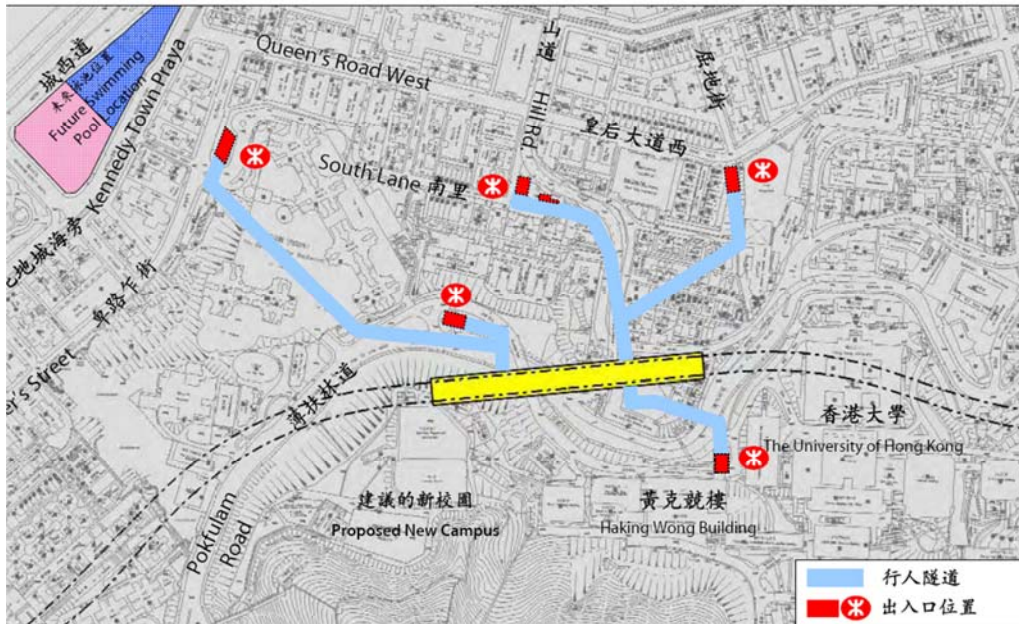
Temporary platform deck

Previous playground becomes the work site using semi-enclosed method to construct the underground station. The working ground is only a deck platform supported by temporary post to maximize disturbance to the neighborhood as well as serving as a work platform

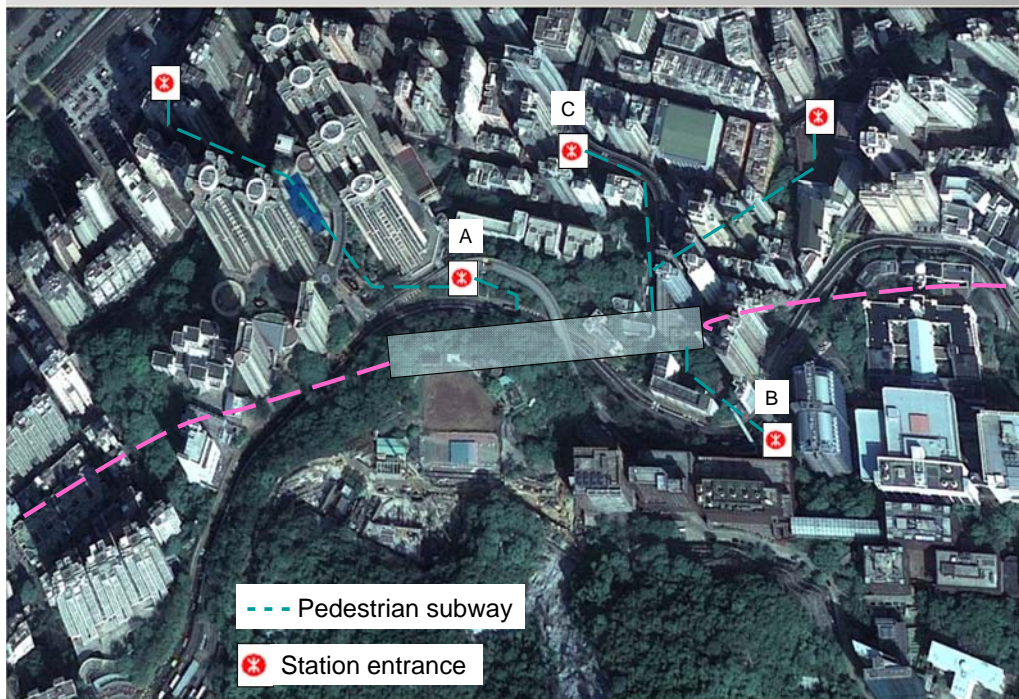
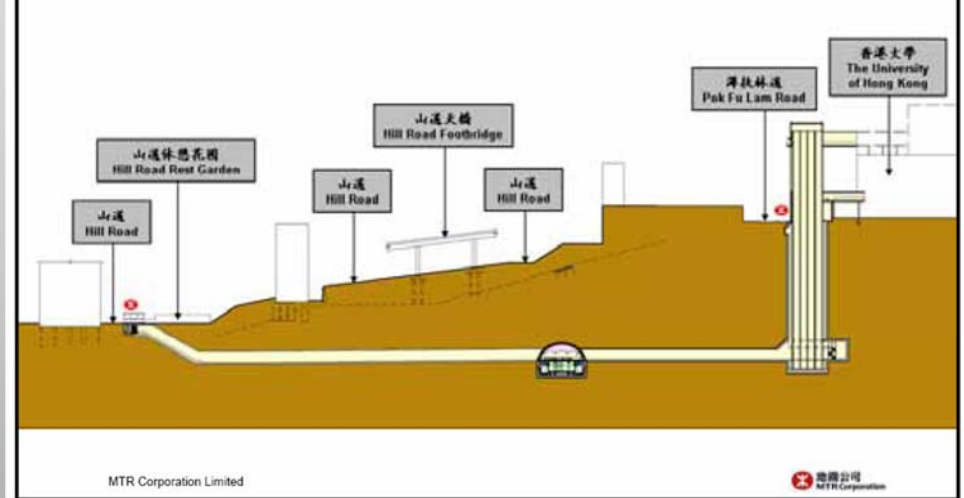


Tunnel coming from University Station

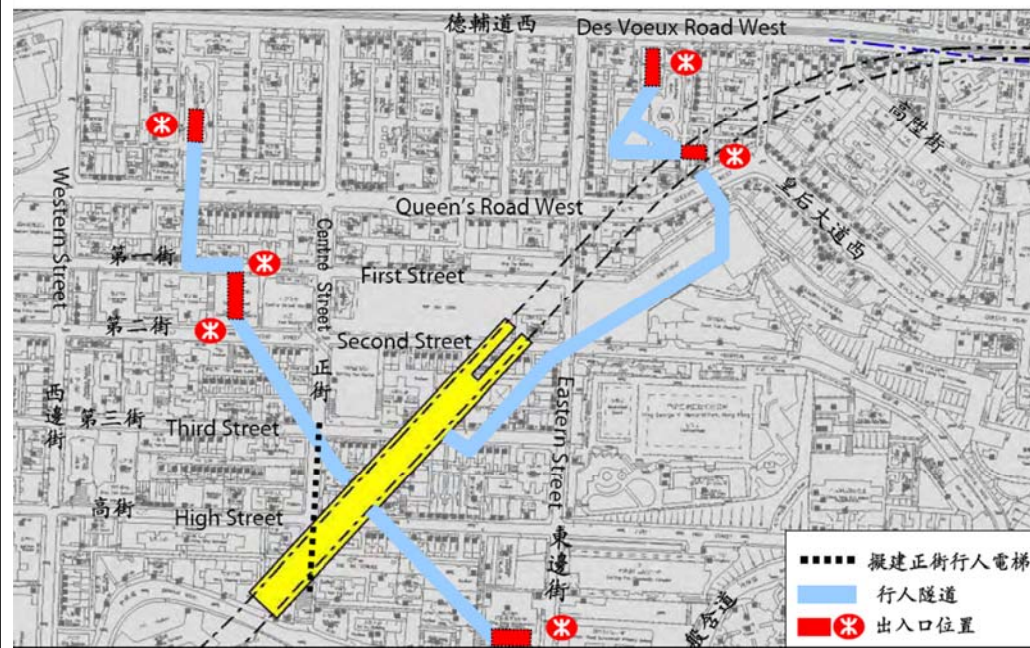
University Station

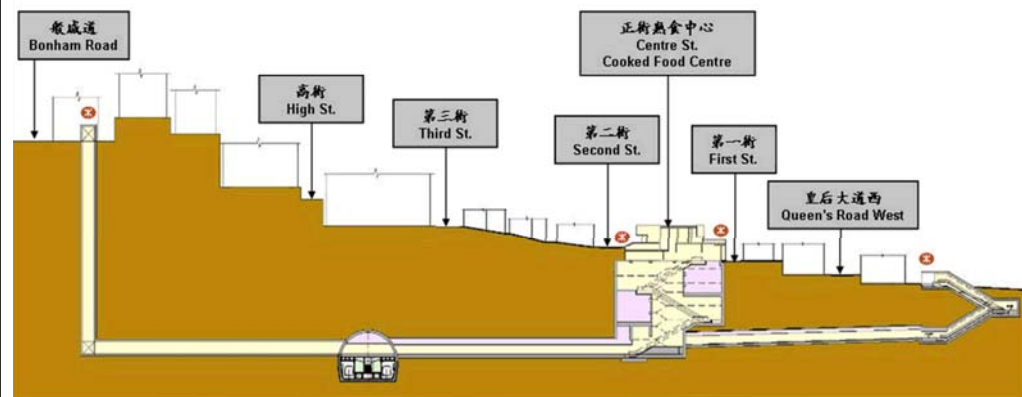
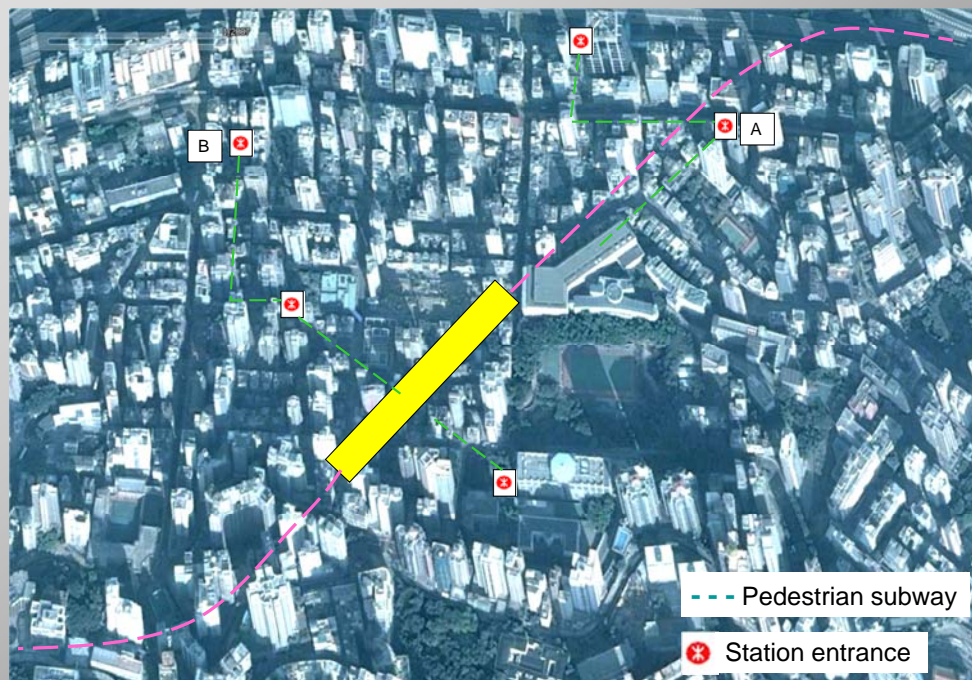


香港大學站之切面圖 Sectional Plan of University Station



Sai Ying Pun Station





Section of the Sai Ying Pun Station and the relation with the nearby urban environment

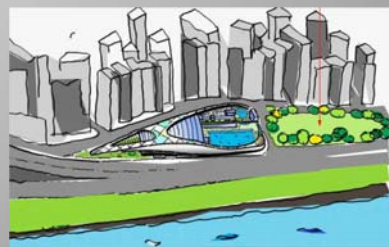
Forming an vertical shaft for the station entrance at entrance A. This vacated open area also forms an service access for the launching of a tunnel boring machine.



Forming an vertical shaft for the station entrance at entrance C. A covering deck has been erected to minimize public disturbance.



New swimming pool completed for operation in early 2011. Upon the changing over, the one in Kennedy Town started the demolition.



重置戴麟趾康復中心 (2) Relocation of David Trench Rehabilitation Centre (2)



新大樓 NEW Building

前半山警署 OLD Building

MTR Corporation Limited

港鐵公司
MTR Corporation



The ex upper-level police Station at High Street as viewed before the commencement of conversion work in late 2009.



Examples showing the complexity of the West Island Line Projects



Difficult location for the forming of pedestrian access point



Access to be provided from underground pedestrian subway leading to elevated location (HK University access)

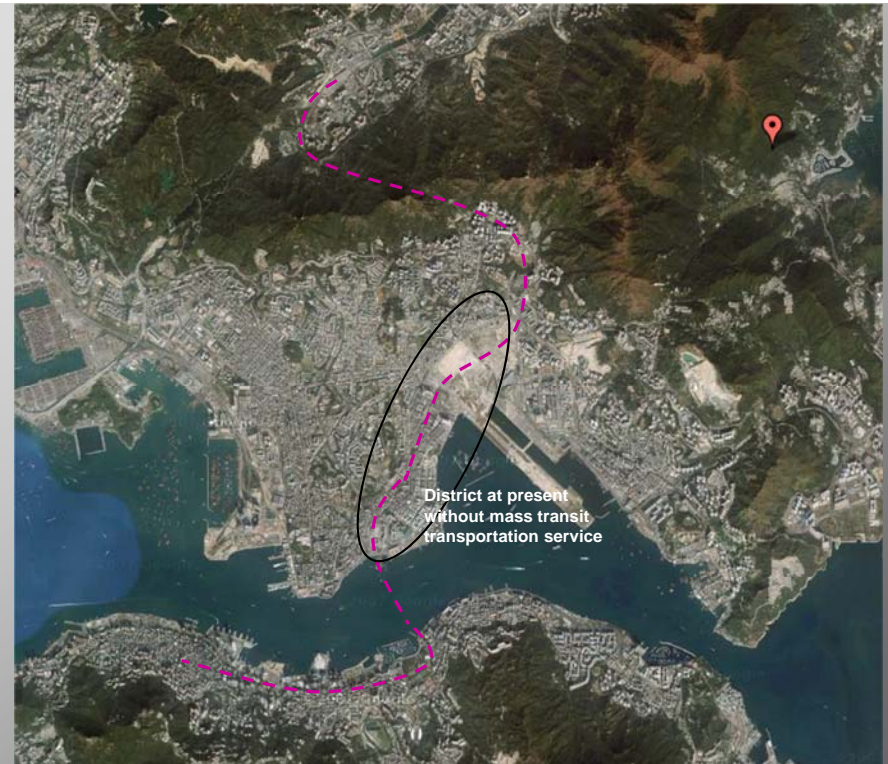
The Sha Tin to Central Link

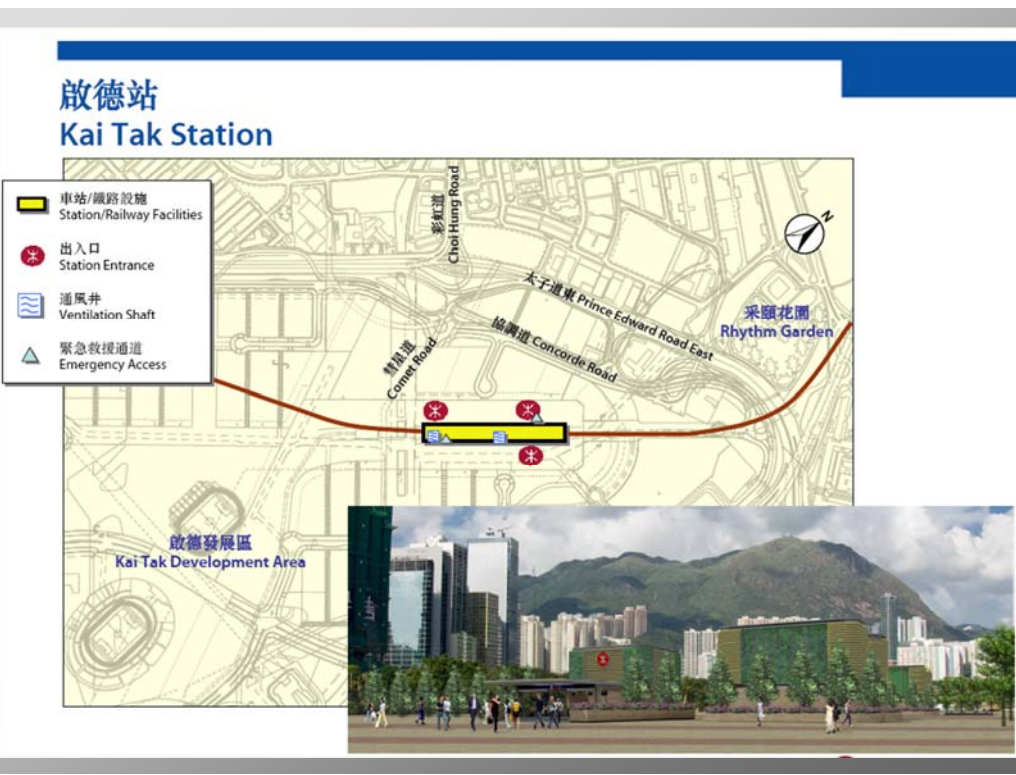
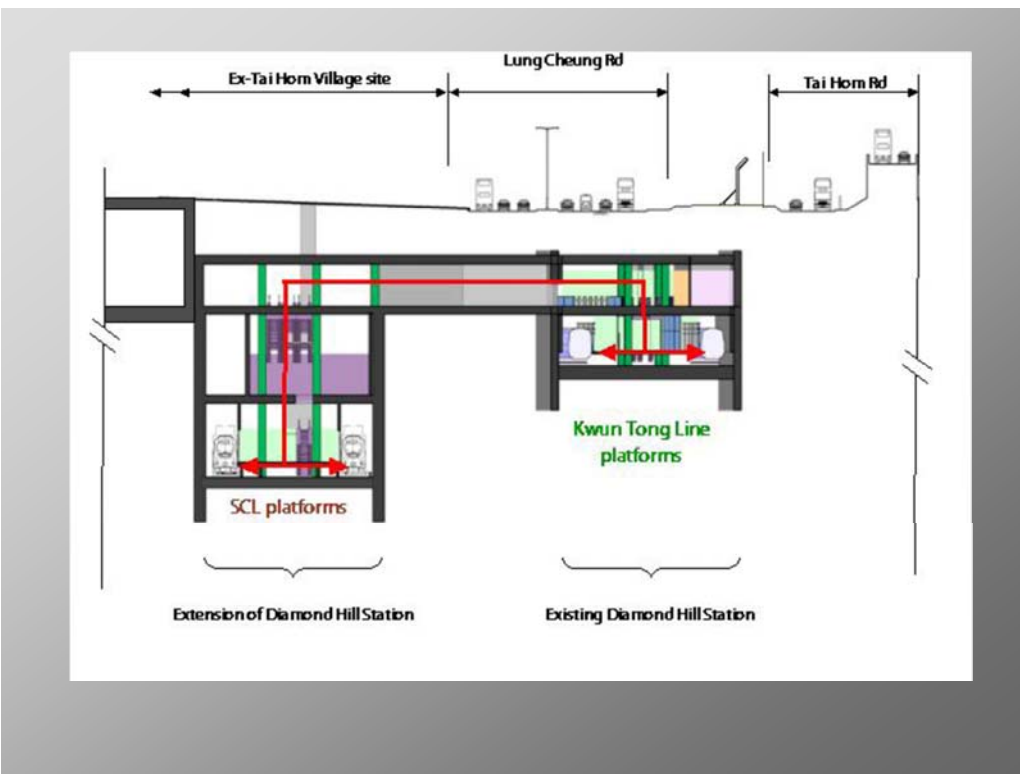
The SCL is one of the strategic railway lines recommended in the Railway Development Strategy 2000. In March 2008, the Executive Council approved the further planning and design of the SCL using a service concession approach under which the project will be funded by the Government and the Corporation is entrusted with its planning and design.

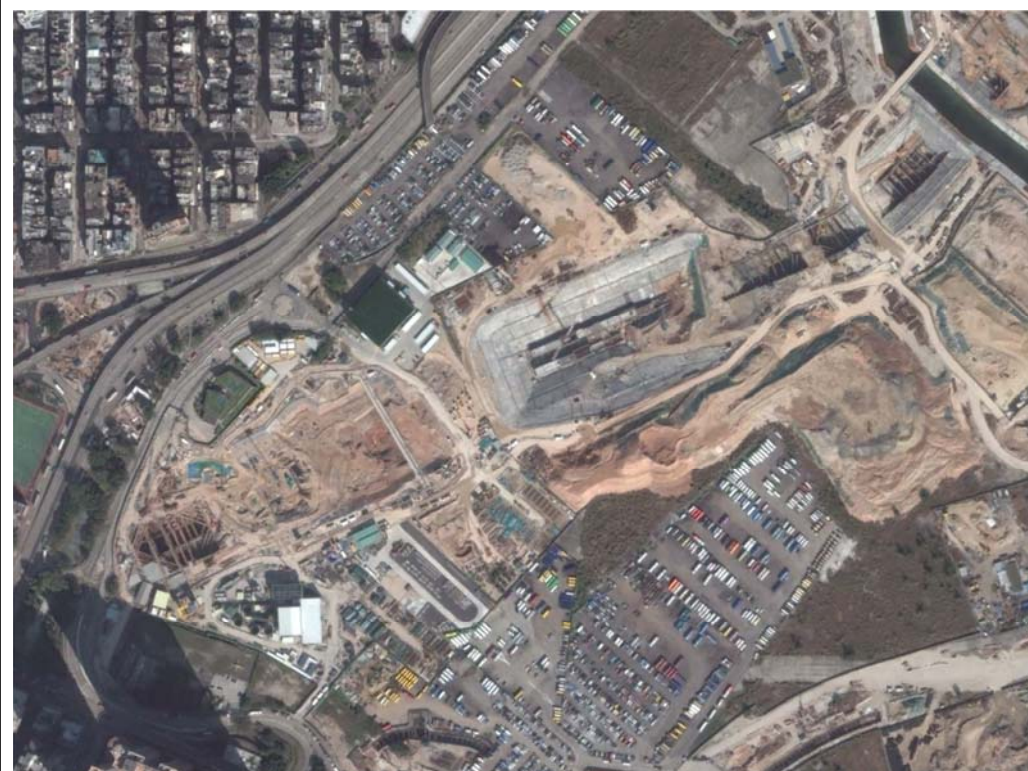
The railway scheme was gazetted on 26 November 2010 under the Railways Ordinance and authorised by the Chief Executive in Council on 27 March 2012. The Finance Committee of the Legislative Council endorsed the funding of the SCL project on 11 May 2012.

Special features of the Shatin to Central Link

- Total length of the line is about 17 km.
- Majority of the track alignment are constructed underground
- Construction of a 3.5 km tunnel running from Tai Wai to Diamond Hill
- Construction of one 1.5 km harbour-crossing tunnel (using immerse tube method) running from Hung Hom to Causeway Bay
- Kwun Tong Line will also be extended from Yau Ma Tei Station to provide rail service for Whampoa area, with an intermediate station at Homantin.
- Interchanging provisions will be allowed for future connection to East Rail at Tai Wai and Hung Hom; to Kwun Tong Line at Diamond Hill, to the future North Hong Kong Island Line at Causeway Bay and the rail network to the Southeast Kowloon redevelopment (former Kai Tak).
- Expedite urban renewal process for East Kowloon along Hung Hom, To Kwa Wan, Kowloon City and San Po Kong





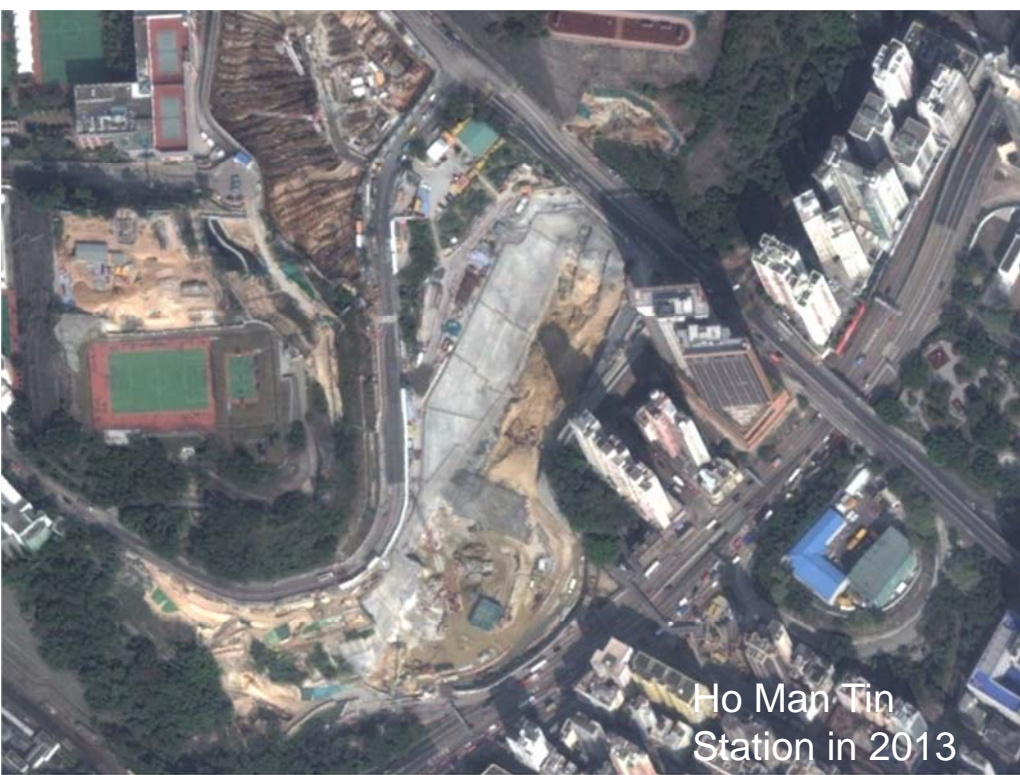




馬頭圍站 Ma Tau Wai Station



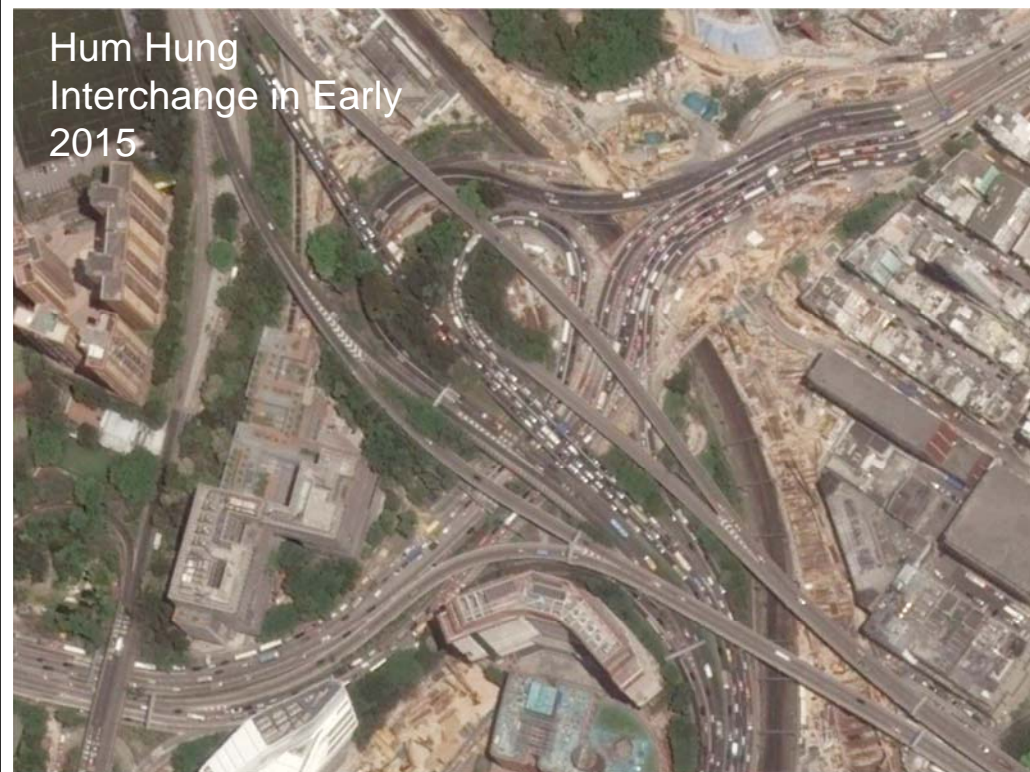
Kwun Tong Line Extension as a sub-network to the Shatin Central Link serving the Whampoa District



Ho Man Tin
Station in 2013



Site formation for the Ho Man Tin Station



Hum Hung
Interchange in Early
2015

Hum Hung Interchange in Early 2015

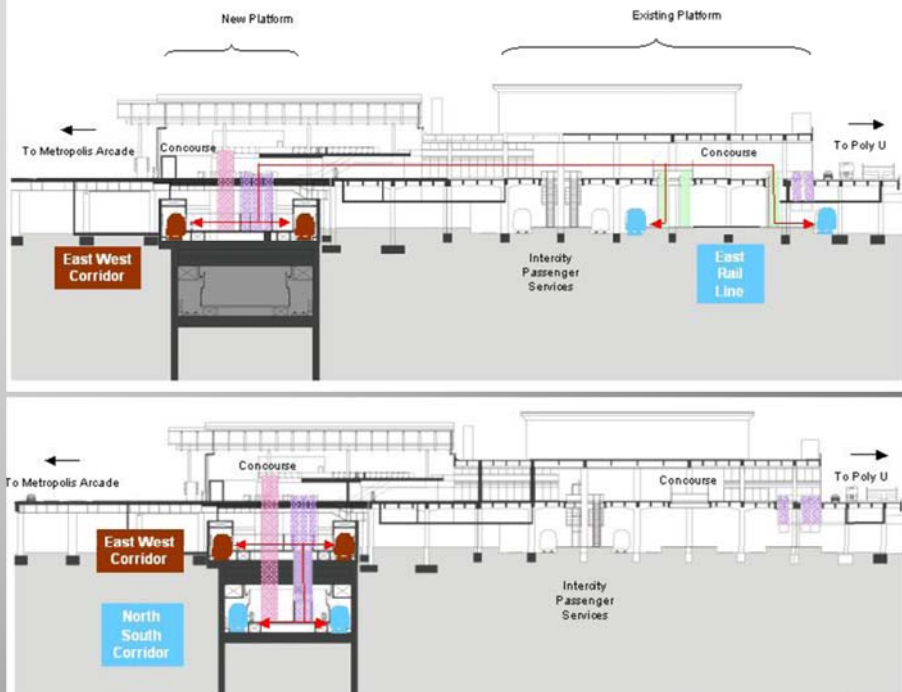


Advance work for the Whampoa Station in early 2012

紅磡站 Hung Hom Station



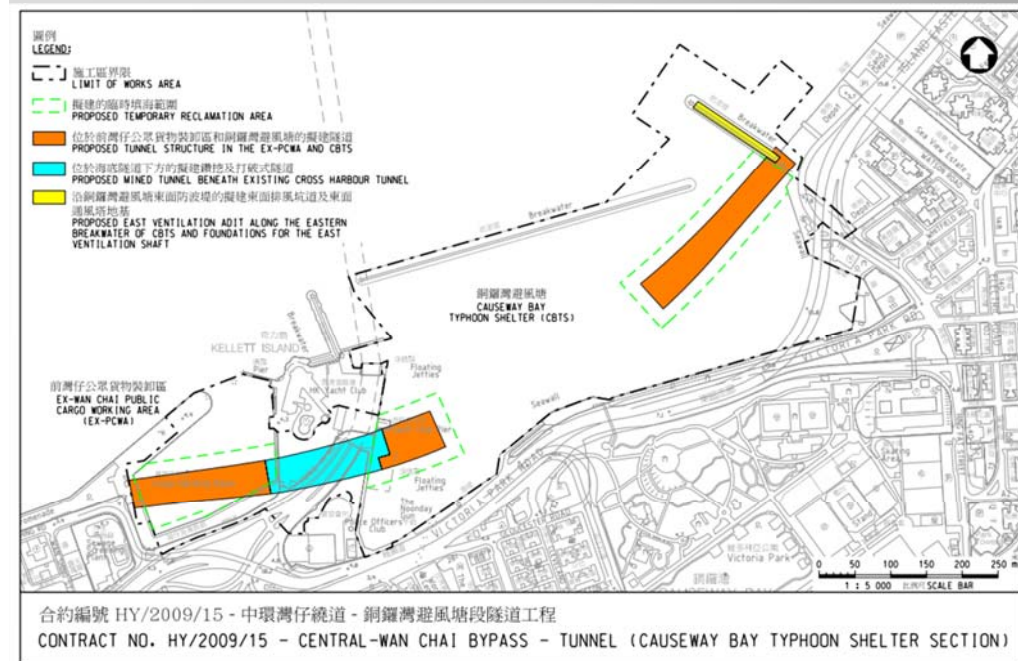
Phasing arrangement to convert Hung Hom Station into an interchanging station



紅磡站 Hung Hom Station



Hom Hung Station in



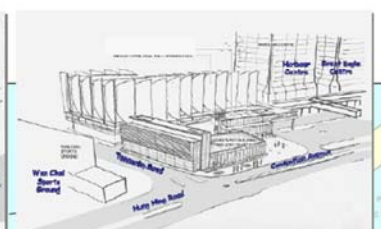


Temporary reclamation and construction of SCL tunnel in Causeway Typhoon Shelter

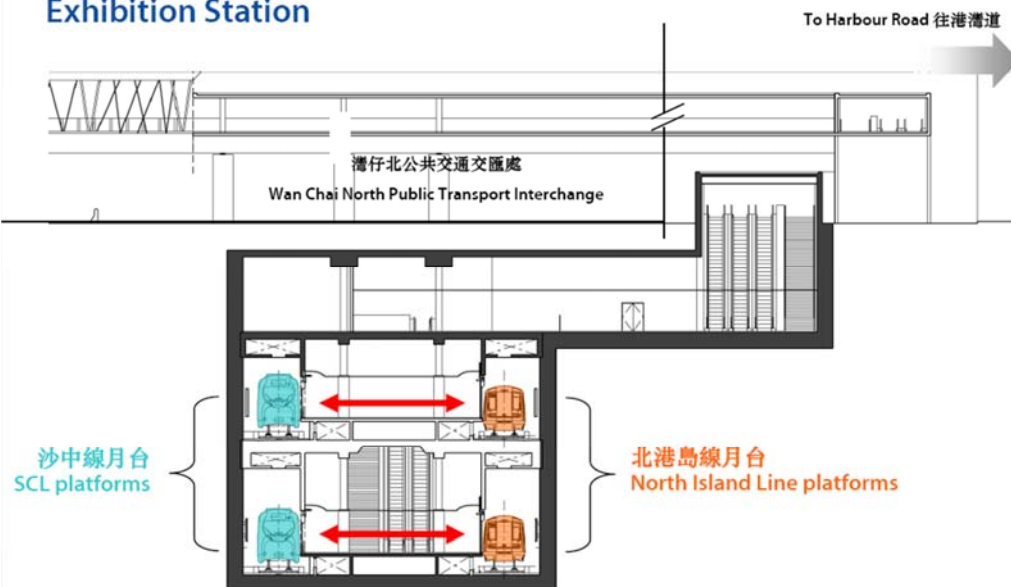


會展站 Exhibition Station

- 車站/鐵路設施
Station/Railway Facilities
- 出入口
Station Entrance
- 通風井
Ventilation Shaft
- 緊急救援通道
Emergency Access
- 升降機
Passenger Lift



會展站 Exhibition Station



金鐘站 Admiralty Station



An construction update of the
Express Rail West Kowloon Terminus

Brief Introduction

The 26-km long Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Express Rail Link, or XRL) runs from West Kowloon in Hong Kong to the boundary of Hong Kong and Shenzhen. The Express Rail Link will connect with the 16,000-km National High-speed Railway Network and will enhance Hong Kong's role as the southern gateway to the Mainland. Construction of the Express Rail Link commenced in January 2010, with completion targeted for 2015.

The rail consists only with a Terminus located to the north of the West Kowloon Cultural District and will be linked to Austin Station and Kowloon Station by footbridges and subways. There will be no intermediate stations in the Hong Kong Section before it reaches Shenzhen.

Proposed Alignment and Method of Construction

The XRL will start from WKT and pass beneath Jordan Road by cut and cover tunnel construction and pass underneath Hoi Wang Road largely by tunnel boring machine (TBM) to a construction shaft located adjacent to Sham Mong Road.

The tunnel will continue northwards and pass beneath Nam Cheong, Lai Chi Kok, Kwai Chung, Shing Mun Country Park, 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 will be provided at Shing Mun, Kwai Chung and Nam Cheong. An adit will be constructed to connect the ventilation building in Kwai Chung with the main tunnel.

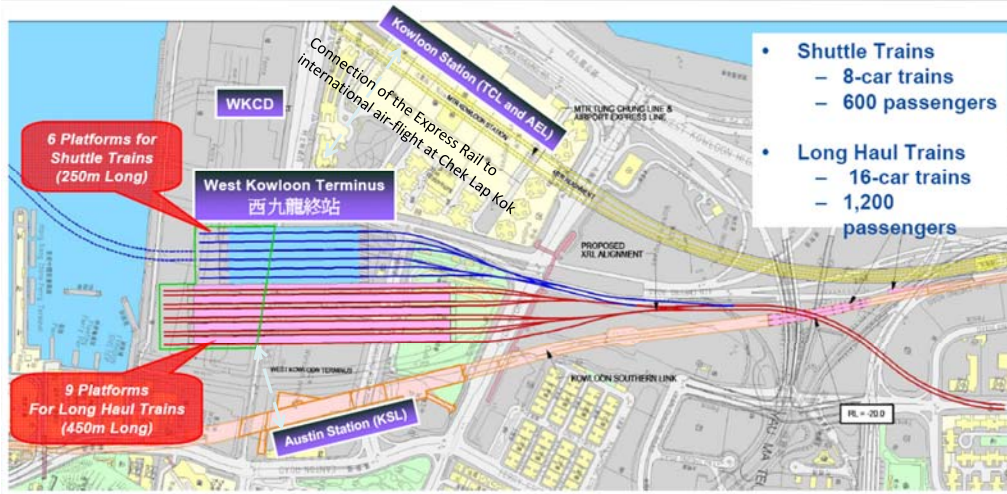
An emergency rescue station will be constructed by cut and cover method at Shek Kong. The tunnel will proceed northwards and pass beneath the Lam Tsuen Country Park towards Ngau Tam Mei. The section between Tai Mo Shan and Lam Tsuen Country Park will be constructed using TBM techniques, while the sections beneath Tai Mo Shan and Lam Tsuen Country Park will be constructed using drill and blast techniques. Ventilation buildings and emergency access points will be located at Pat Heung, Tai Kong Po and Ngau Tam Mei. An adit will be constructed to connect the ventilation building in Pat Heung with the main tunnel.

North of Ngau Tam Mei, the alignment will pass deeply 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 Mai Po



Aerial view of the Express Rail Terminal at West Kowloon in 2011

Layout of the Terminus showing the rail platforms



The Terminus site as seen in late 2010



The terminus site (north) as seen in mid 2012

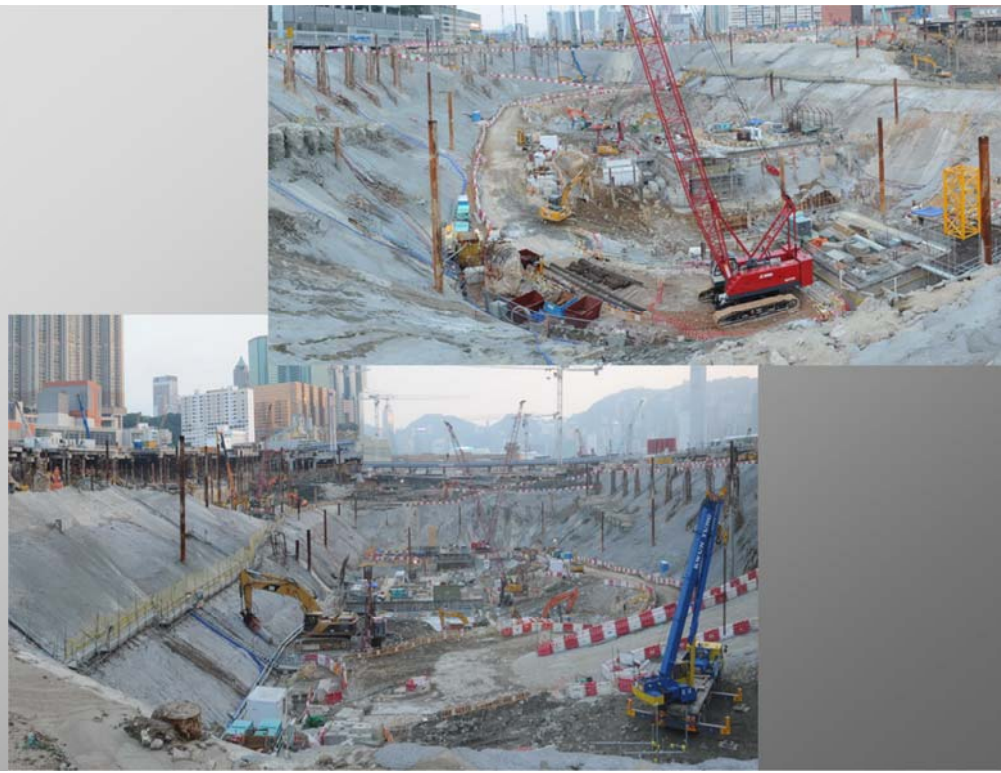


April 2012



August 2012

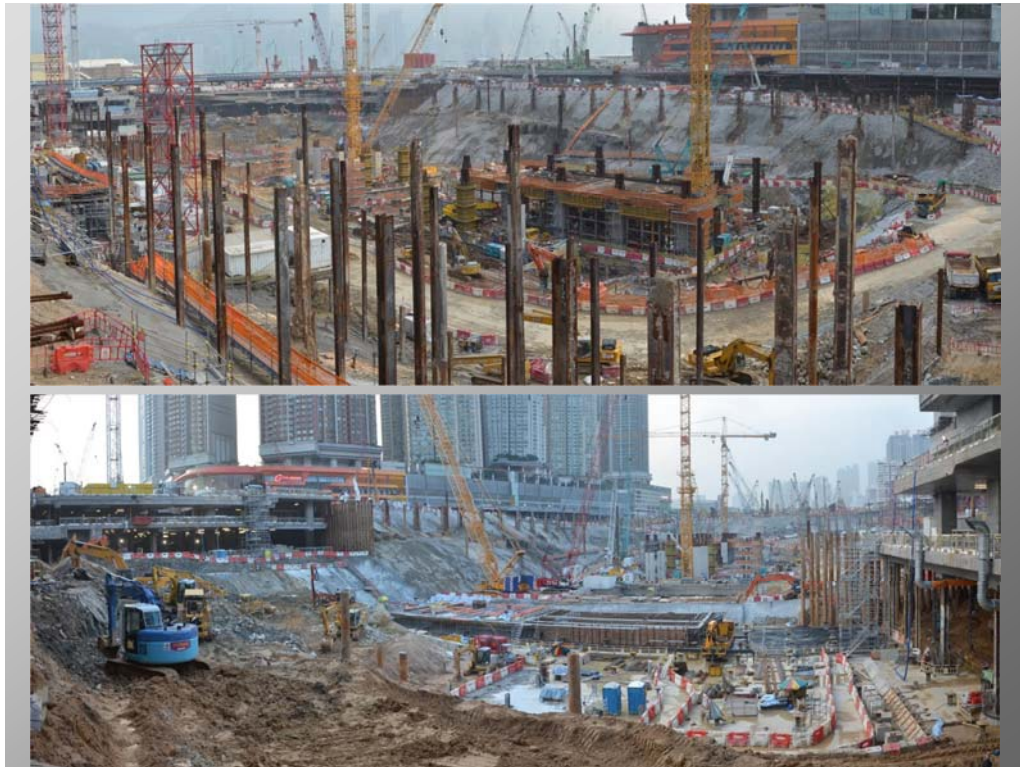
Excavation process for the terminus at West Kowloon

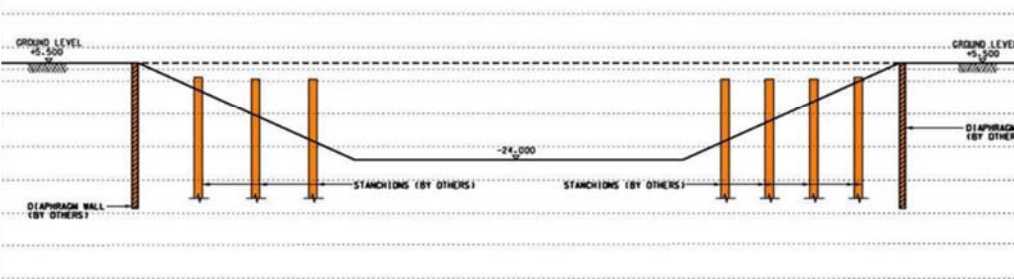
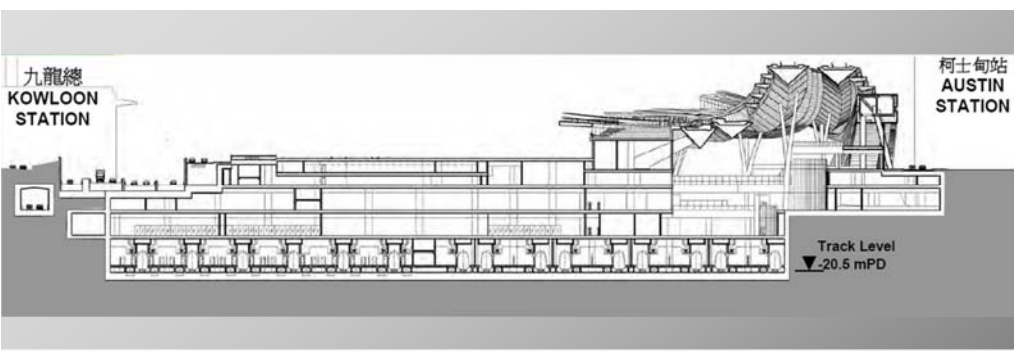


Overview of site as in May 2013



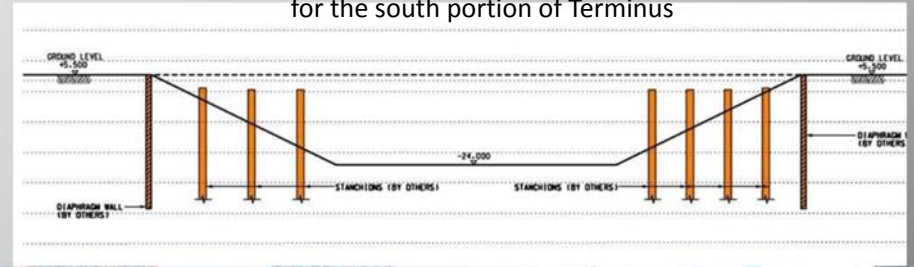
Overview of site as in August 2013



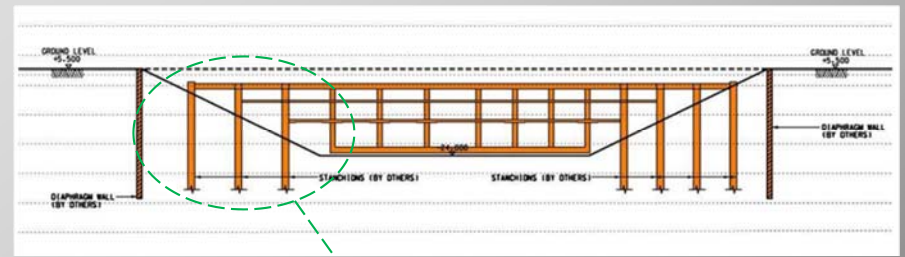


Section showing the underground space of the Terminus

Excavation proposal and the actual work set-up for the south portion of Terminus

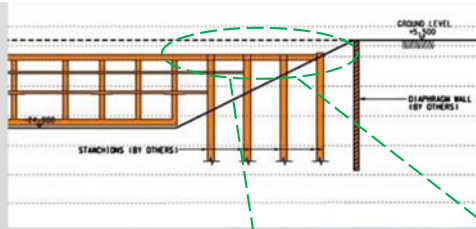


Progress in December 2012

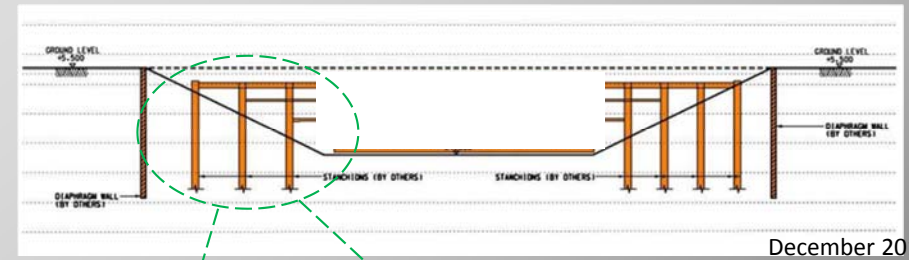


March 2012





Casting of the first slab before top-down

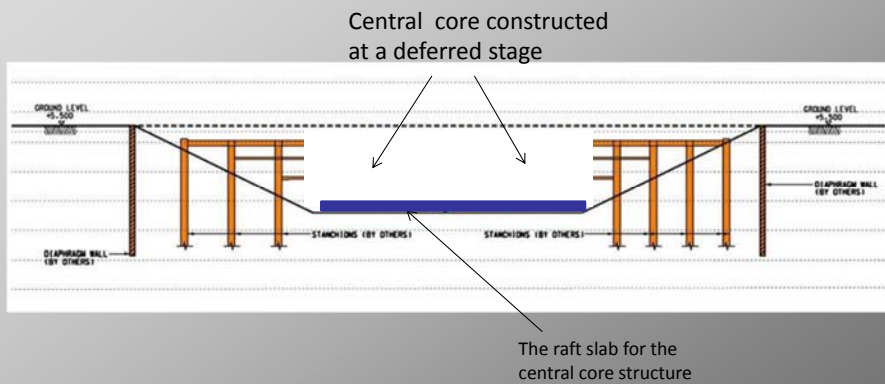


December 2012



December 2013





Construction of the central portion of the terminus structure



Falsework to support the erection of steel truss for the future canopy structure

Overview of the southern tip of site as in April 2014



Overview of the terminus structure as in March 2015



Complicated construction layout as seen in mid 2015



Underground structure at the terminus south was basically constructed using top-down approach. These photos show the supporting detail of the ground slab on steel stanchions



Temporary carriageway (Lin Cheung Road) ---





The approaching tunnel constructed using cut-and-cover method as seen in mid 2014



Views inside the cut-and-cover tunnel
(Mid 2014)



Tunnel end heading to the
Tai Kok Tsui TBM section



The curved roof in the form of a canopy iconized the design of the Express Rail Terminus in West Kowloon

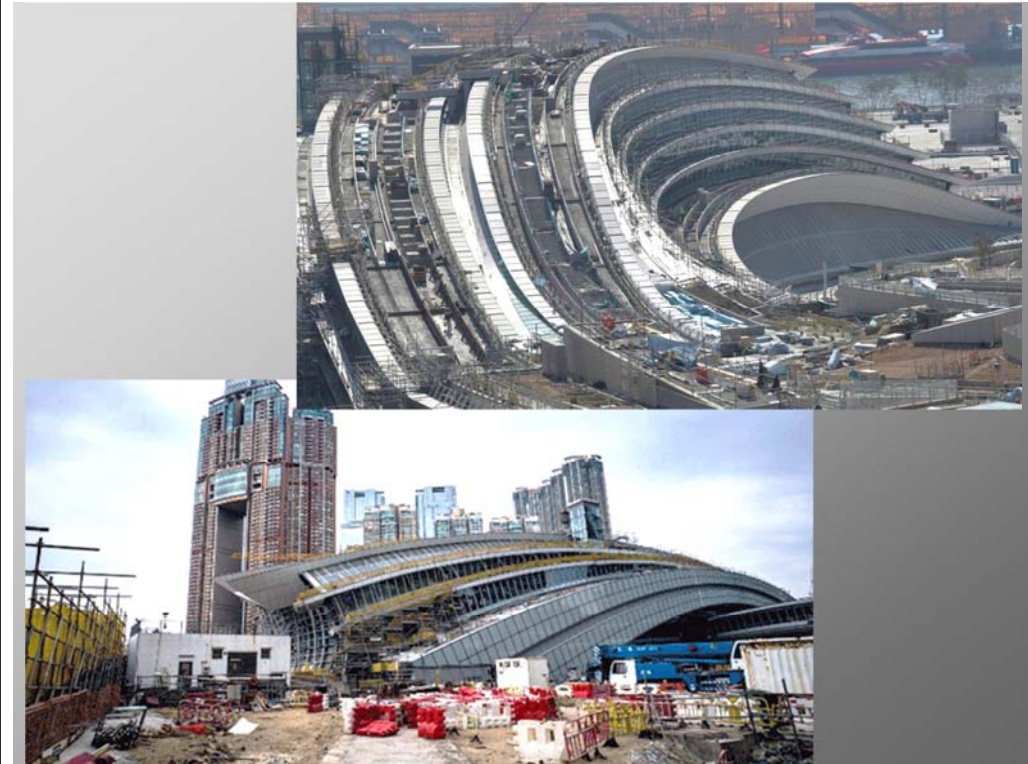
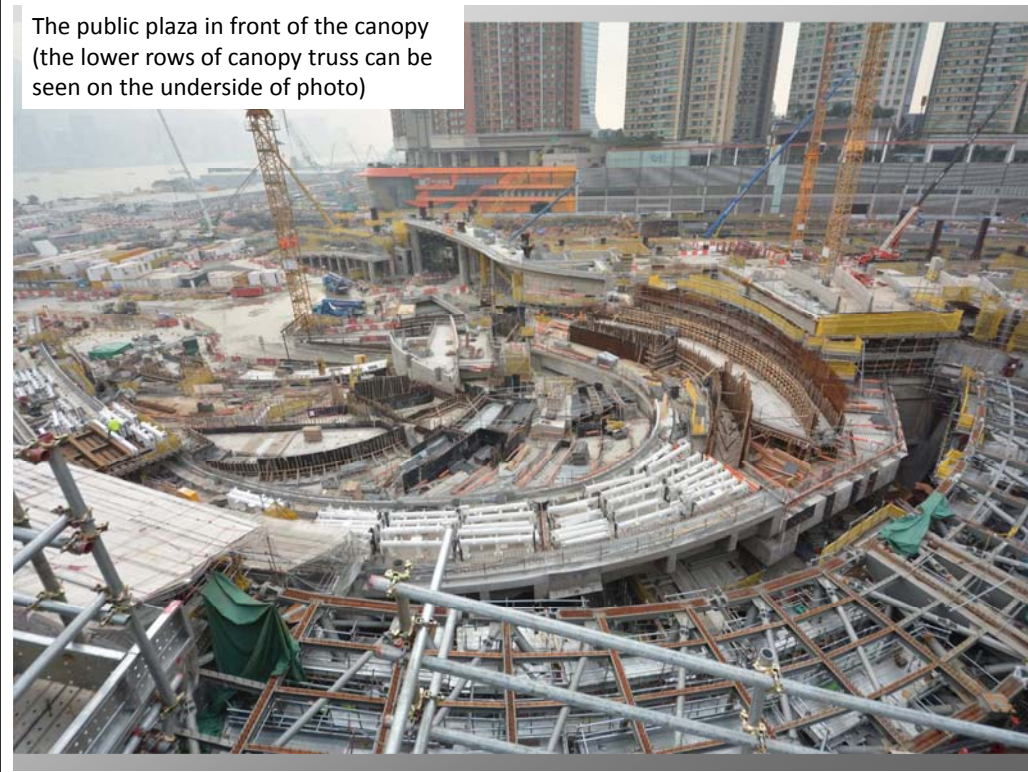


Erection of the main canopy truss as in Feb 2016

View on the top of the 3rd roof truss

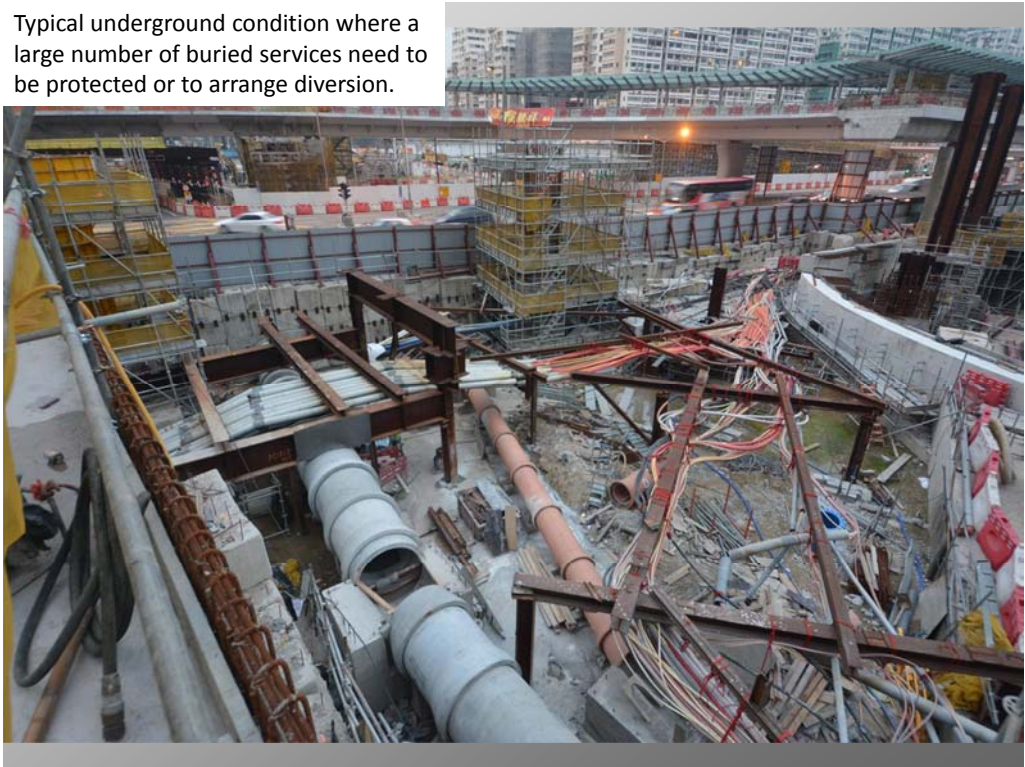


The public plaza in front of the canopy
(the lower rows of canopy truss can be seen on the underside of photo)





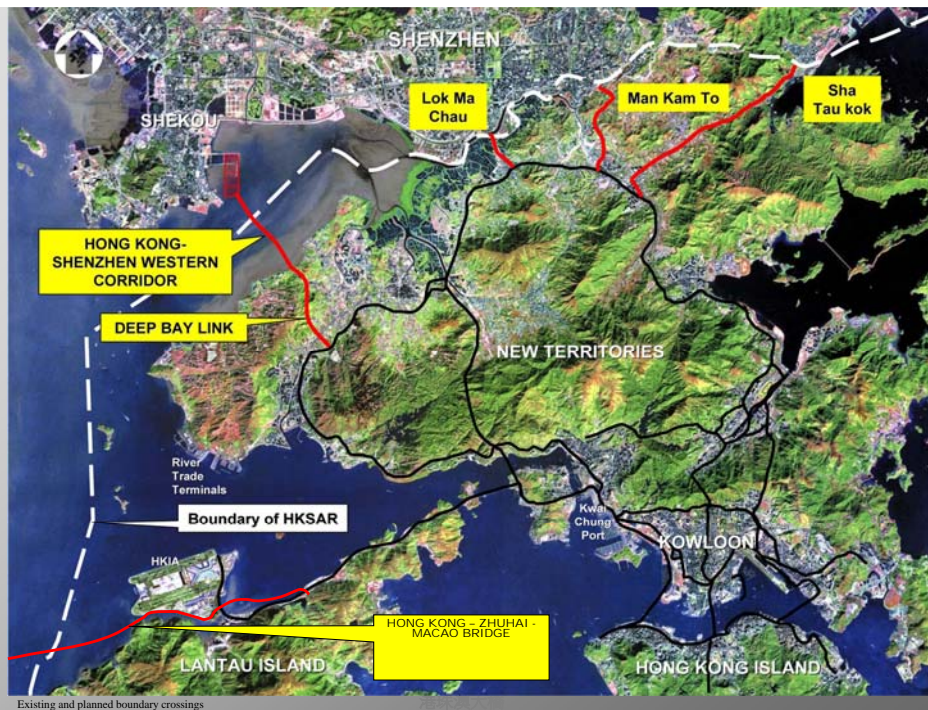
Typical underground condition where a large number of buried services need to be protected or to arrange diversion.



Part 2 Major Highway Projects

New Route Numbers

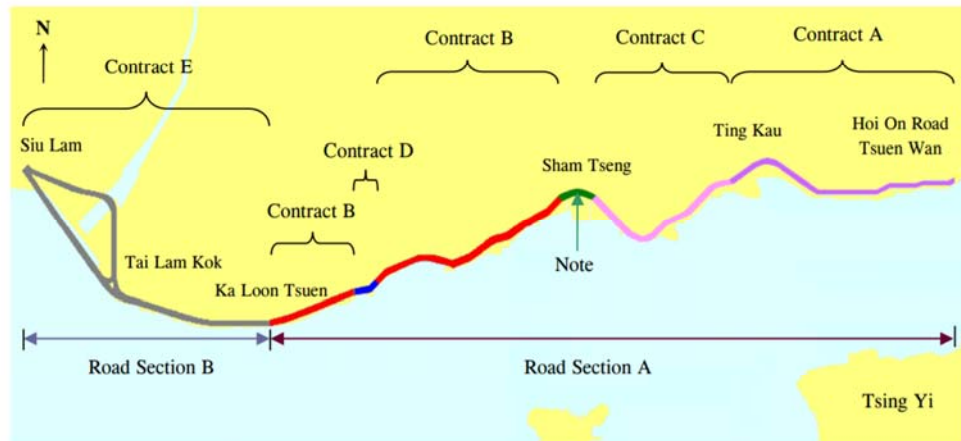




Strategic Cross Boundary Traffic

Widening of Castle Peak Road

Road sections under 5 works contracts



Source: HyD records

Contract	Original contract sum (\$ million)	Contract commencement date	Substantial completion date
Contract A — a road section between Hoi On Road and Ting Kau	843.0	17.8.2001	17.3.2005
Contract B — a road section between Sham Tseng and Ka Loon Tsuen (excluding the road section under Contract D — see Figure 1)	764.0	23.11.2001	25.5.2006 (Note)
Contract C — a road section between Ting Kau and Sham Tseng	963.0	21.5.2002	31.7.2006
Contract D — a road section at west of Tsing Lung Tau (not covered under Contract B — see Figure 1)	92.8	21.12.2005	30.6.2007
Contract E — a road section between Ka Loon Tsuen and Siu Lam	608.1	8.3.2004	24.2.2007

Road Section A

(8.3 km between Hoi On Road and Ka Loon Tsuen)

1. widening and realignment of Road Section A from a single two-lane to a dual two-lane carriageway, with a footpath of 3-m wide on both sides, including the construction of elevated highway structures
2. associated works on road reconstruction, road-junction modifications, slope stabilization, landscape, lighting and drainage
3. reclamation of 2.8 hectares of land
4. construction of two seawalls, 310 m & 970 m in length
5. installation of noise barriers
6. construction of a 300-m long two-lane flyover in Ting Kau and eleven covered footbridges
7. provision of recreational facilities at five beaches in the area to compensate for alienation of beach space

Road Section B

(2.3 km between Ka Loon Tsuen and Siu Lam)

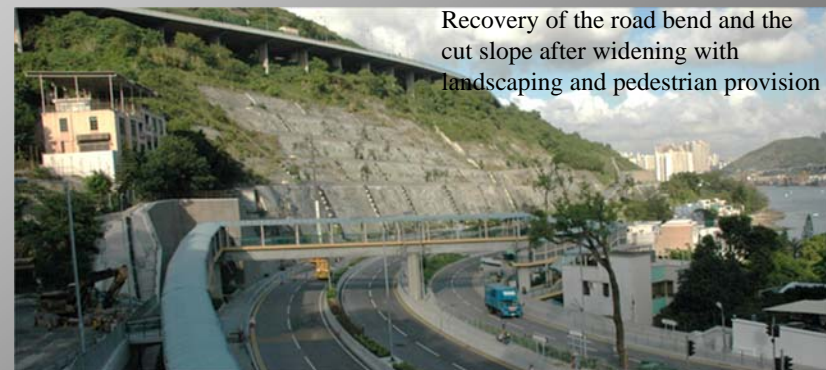
1. widening of the section between Ka Loon Tsuen and Tai Lam Kok from a three-lane carriageway to a dual two-lane carriageway with a 3-m wide footpath on both sides
2. construction of a new section between Tai Lam Kok and Siu Lam, including a dual two-lane viaduct
3. reclamation of 0.8 hectare of land
4. construction of a seawall of 1.1 km in length
5. provision of a roundabout at Tai Lam Kok
6. reconstruction of the section between Tai Lam Kok and Siu Lam

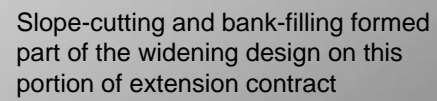


Large-scale slope-cutting along the east bank of the original Castle Peak Road formed a major component in this portion of contract

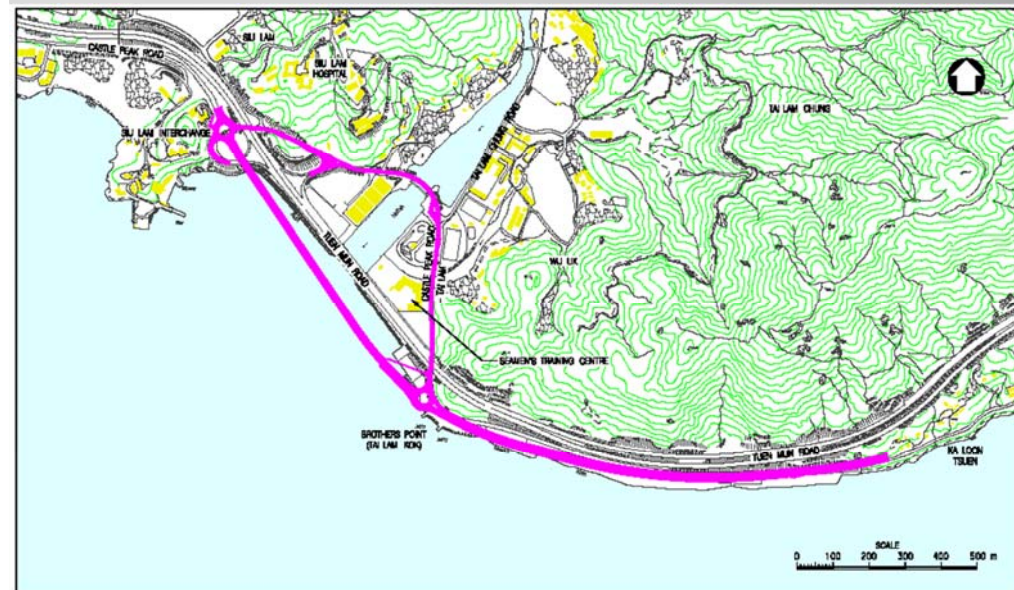


Recovery of the road bend and the cut slope after widening with landscaping and pedestrian provision





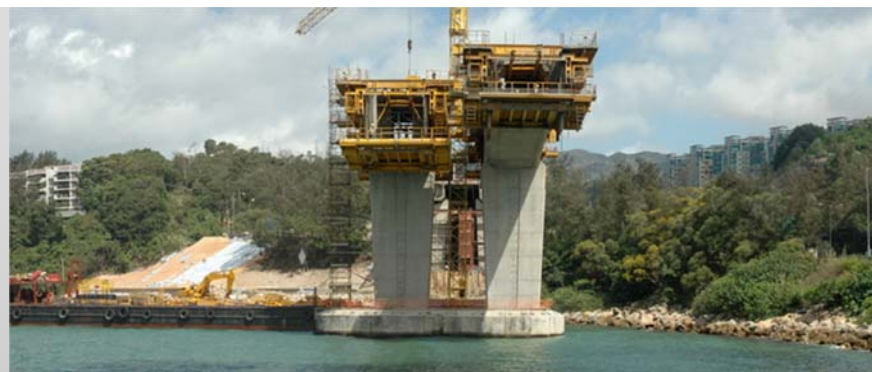
Using earth reinforced wall to obtain extra space the road widening



Siu Lam Section

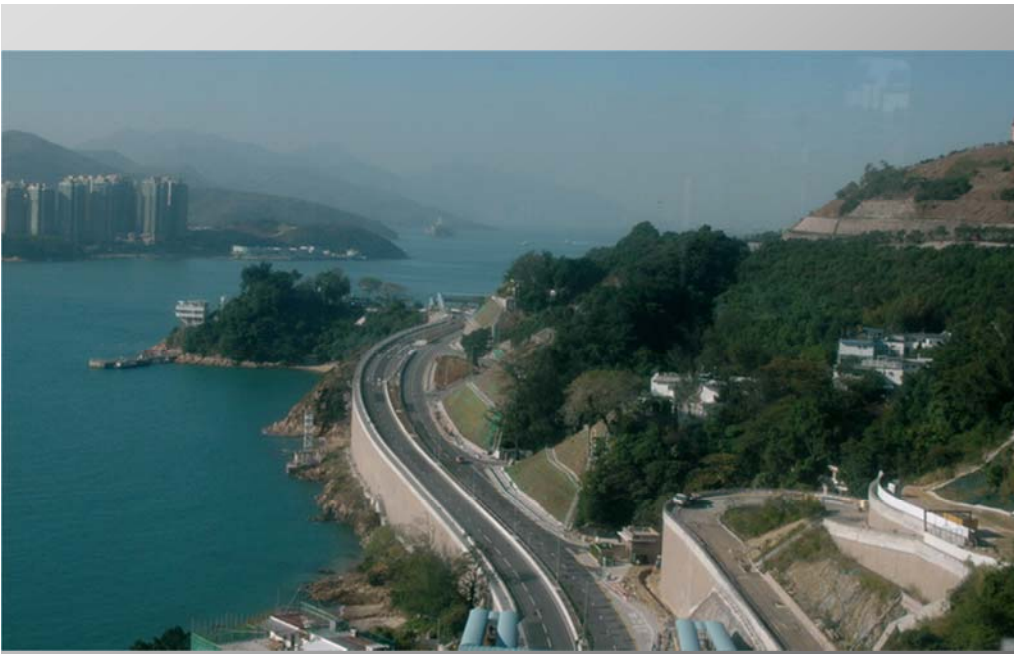


Dredging and Reclamation work near Tai Lam Kok



The new bridge crossing Sui Lam Bay



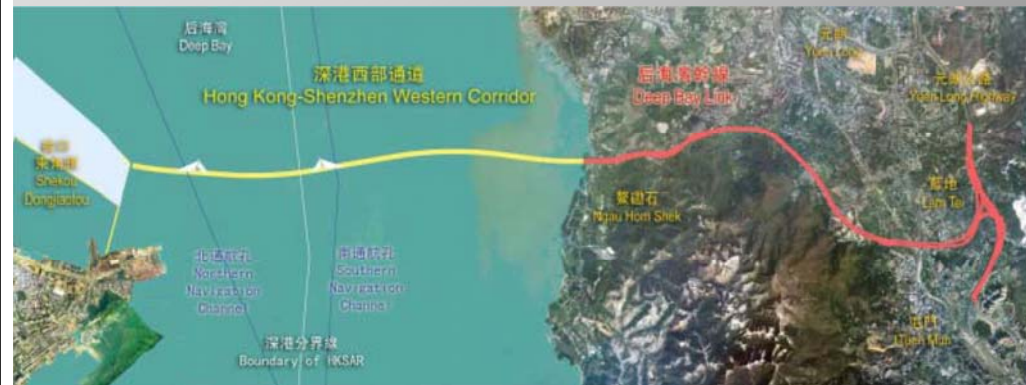


The newly completed Castle Peak Road as seen from a high position



Shenzhen Western Corridor and Deep Bay Link (HK\$2.2 + 2.9 Billion, 2003 – 2006)

Shenzhen Western Corridor and Deep Bay Link

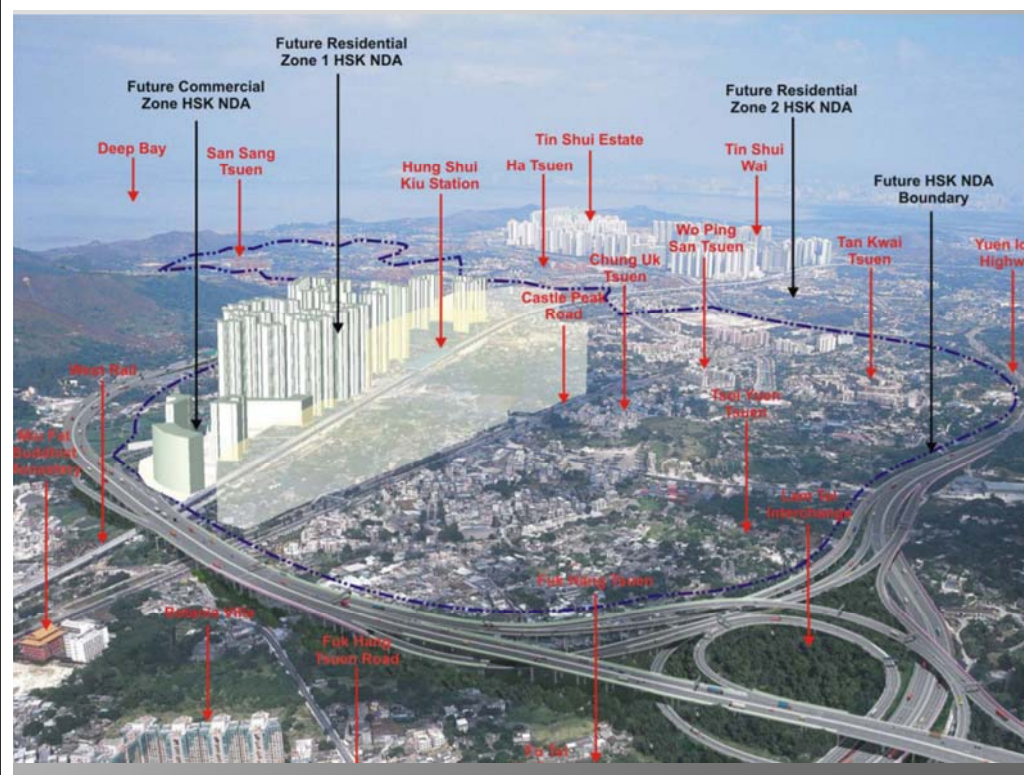


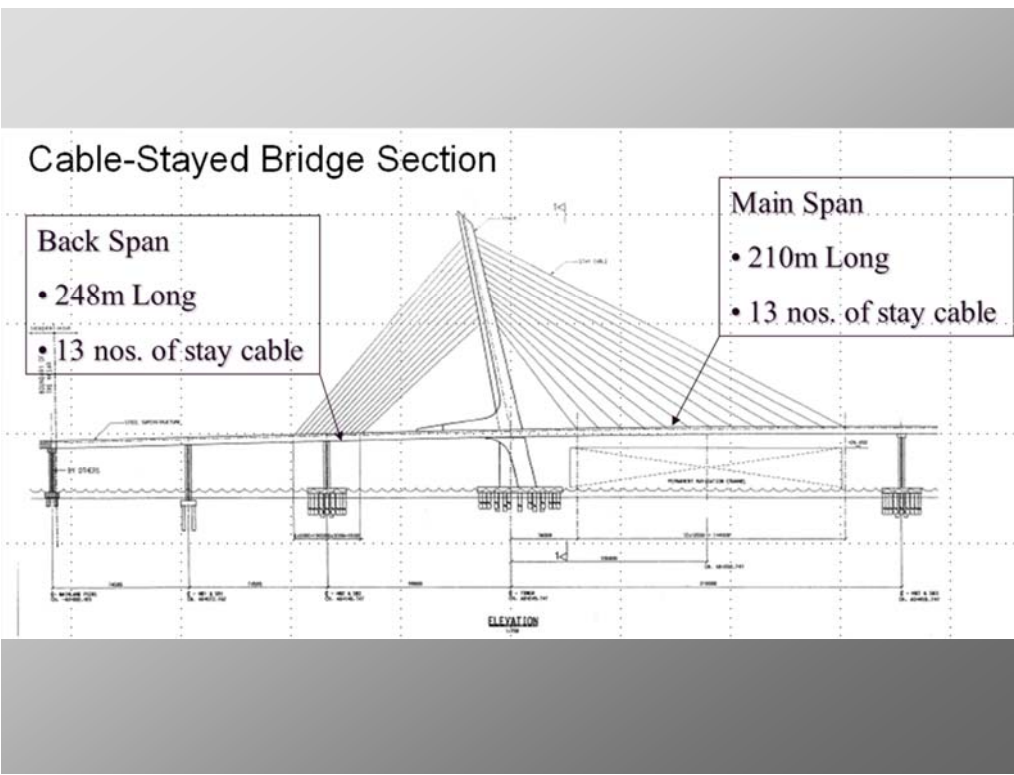
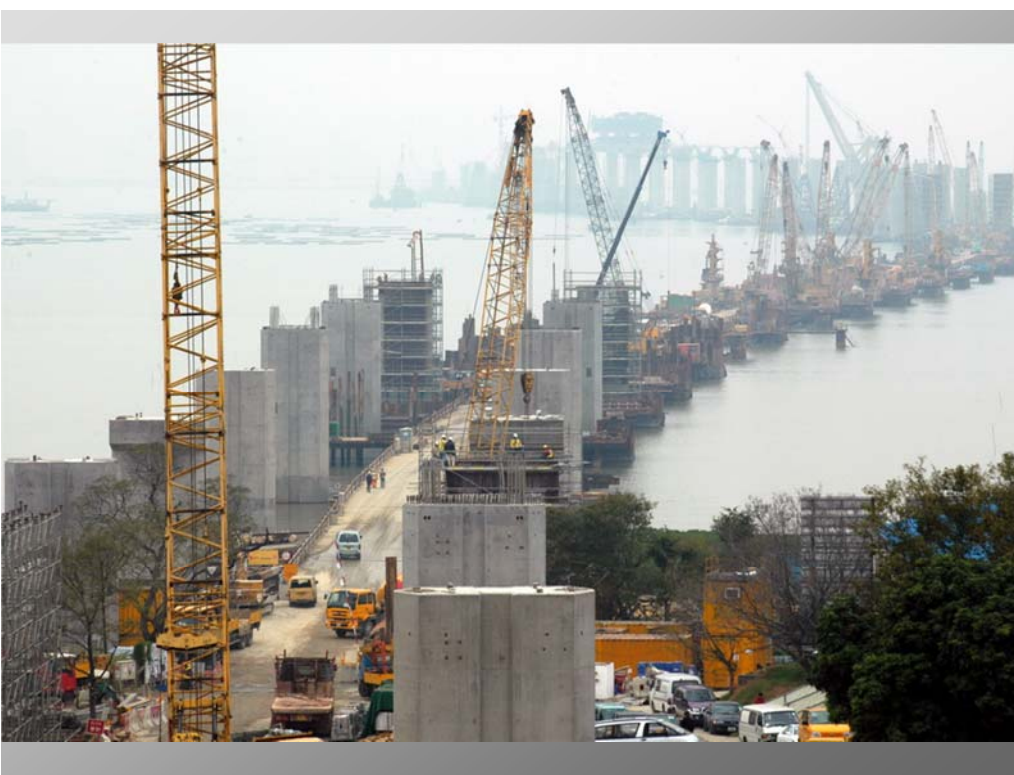
China Section

Western Corridor

Deep Bay Link (north)
By Gammon

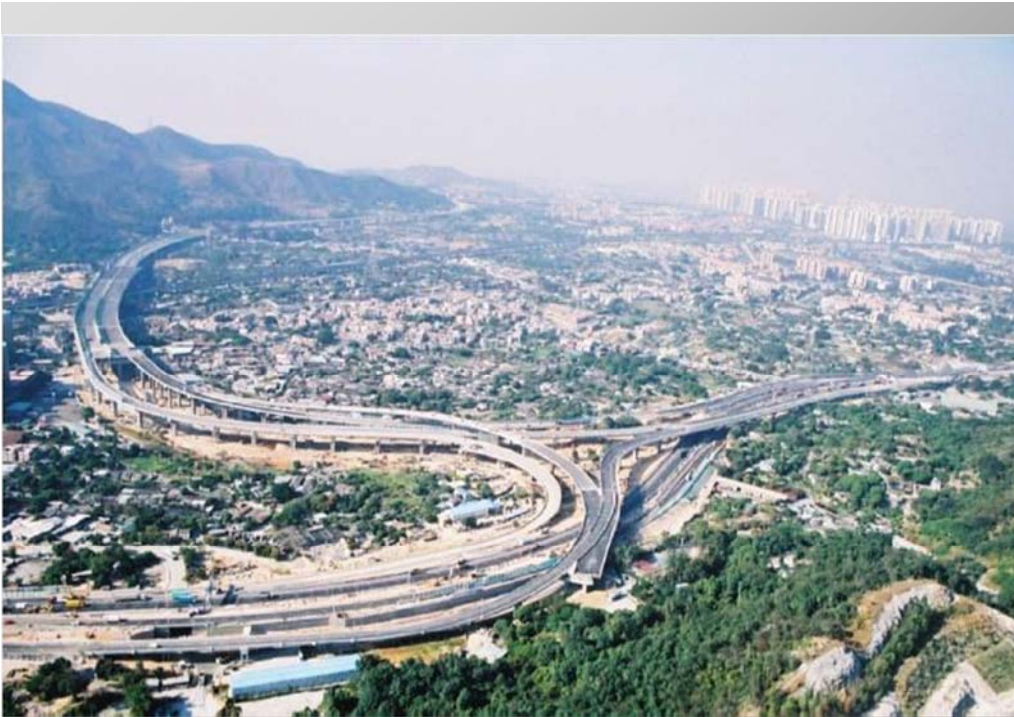
DBL (S)
By China
State







Deep Bay Link
(north and south section)





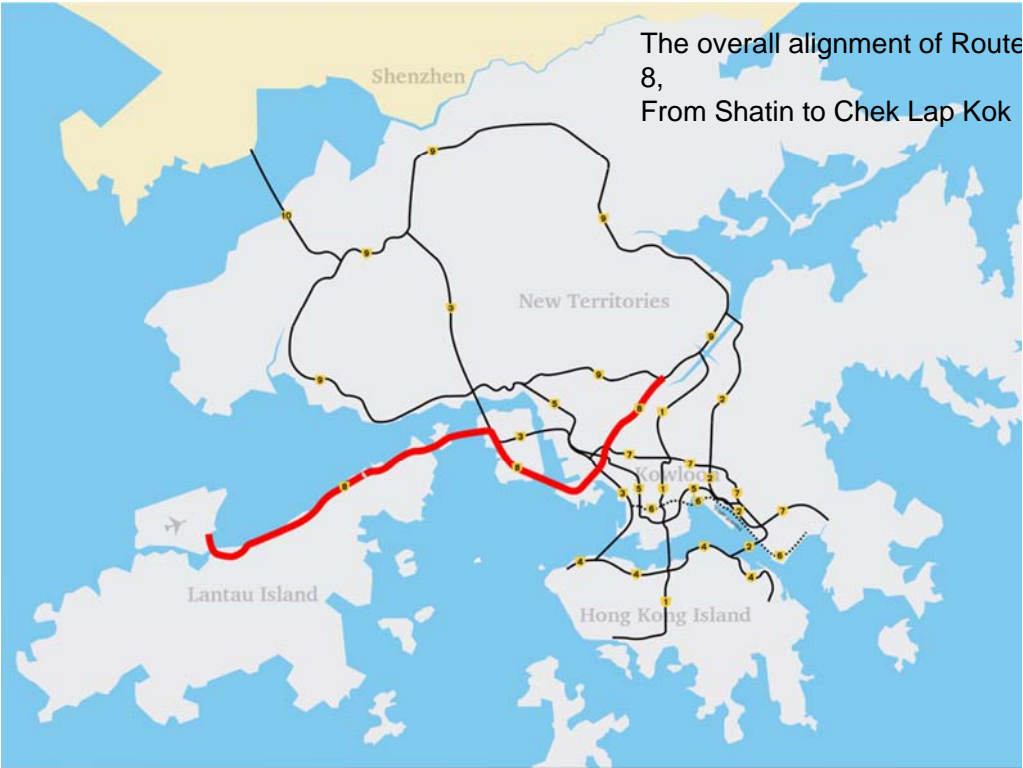


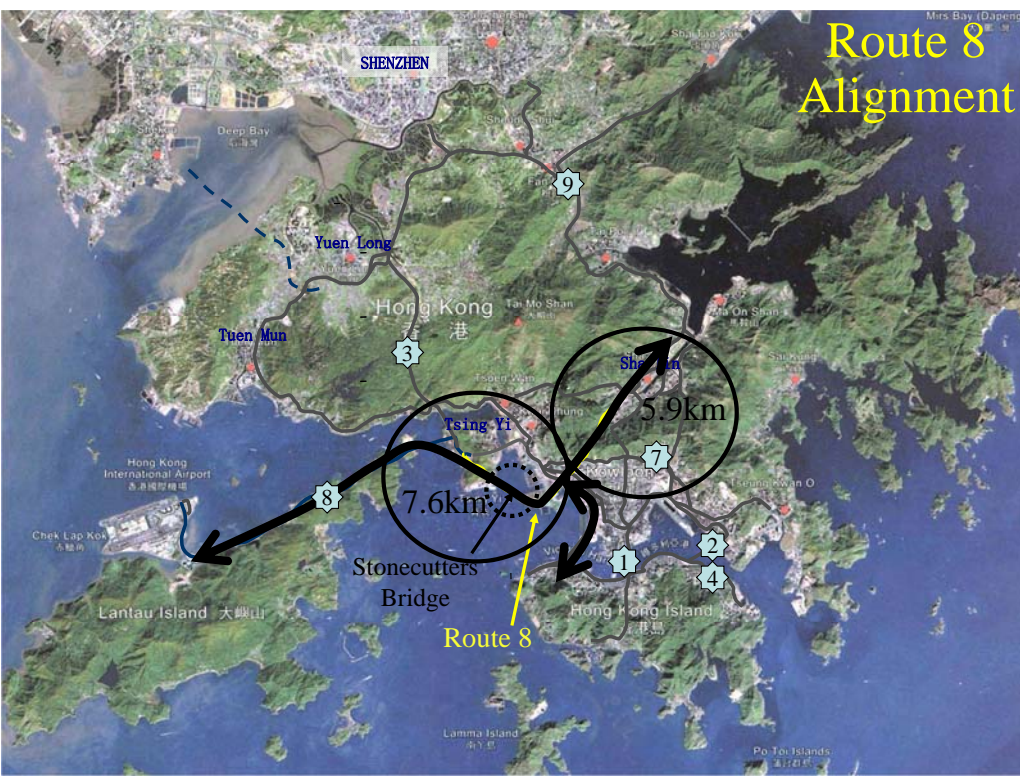
The Route 8 project

(2002 to 2009),

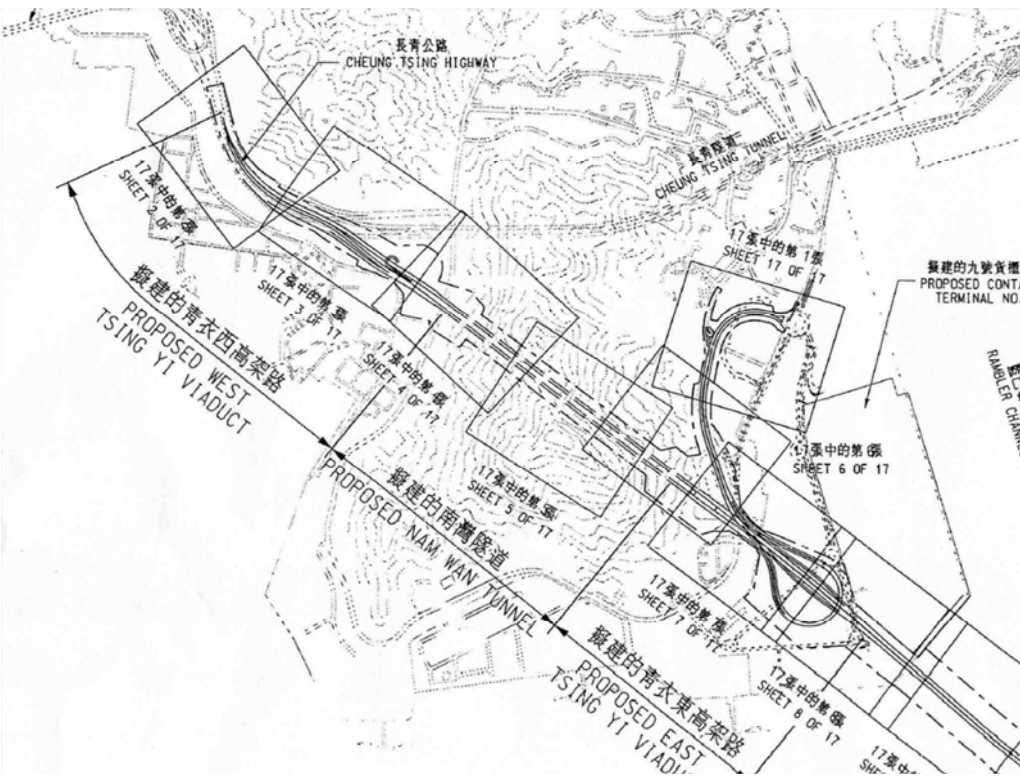
Route 8, the major projects included the following

contracts: Contract No.	Contract Title	Sum (million)
HY/2000/21	Ngong Shuen Chau Viaduct	\$1,538
	Lai Chi Kok Viaduct	\$1,066
HY/2001/16	Lam Wan Tunnel & West Tsing Yi Viaduct	\$1480
HY/2002/26	Stonecutters Bridge	\$2,760
HY/2004/02	East Tsing Yi Viaduct	\$1,011
	Shatin Heights Tunnel and approach	\$1,074
	Eagle’s Nest Tunnel and associate works	\$1,836
	Tai Wai Viaduct & Shatin Interchange	\$1,500
	Total contract sum (excluding some associated works)	\$13,000 (approx.)





Route 8 Tsing Ma Interchange and Nam Wan Tunnel



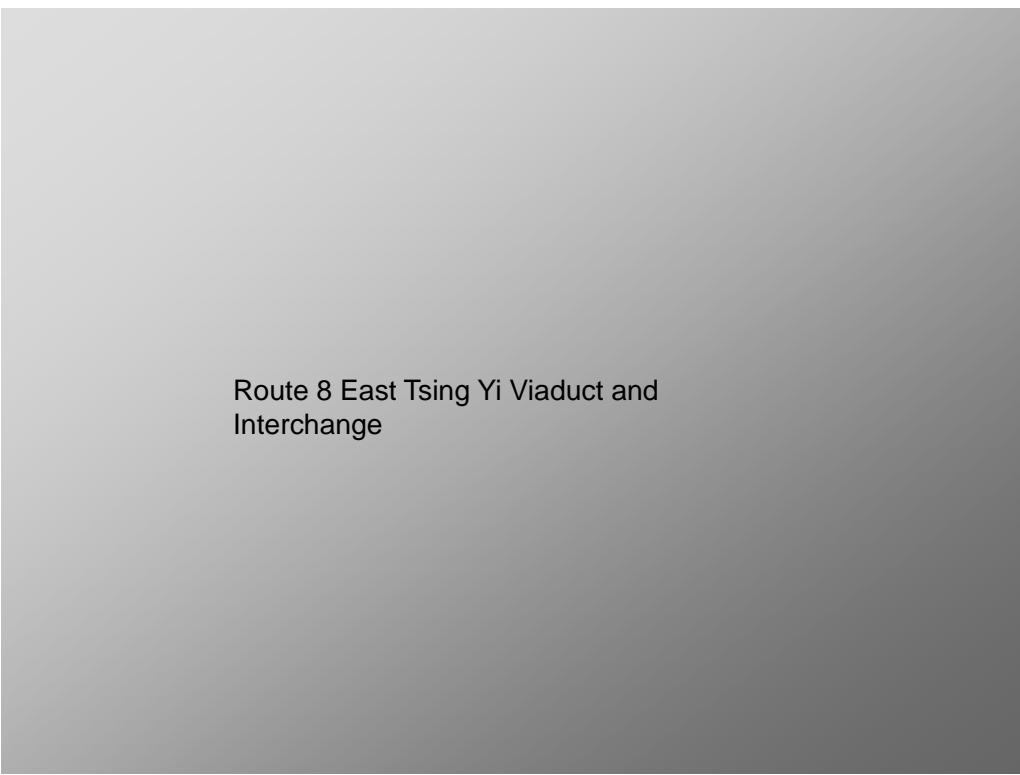


Tsing Ma
Concourse

Nam Shan Tunnel



Nam Shan Tunnel portal leading to the Tsing Ma Concourse as seen in 2005



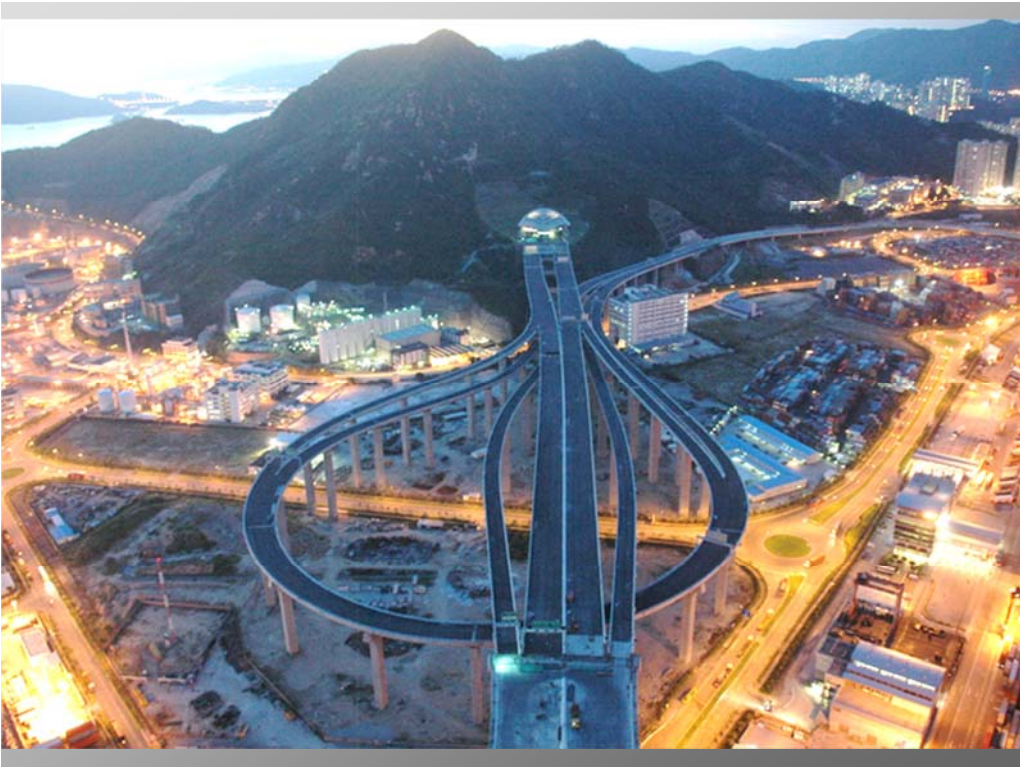
Route 8 East Tsing Yi Viaduct and
Interchange



Nam Shan
Tunnel

East Tsing Yi
Viaduct and
Interchange

Container Terminal 9



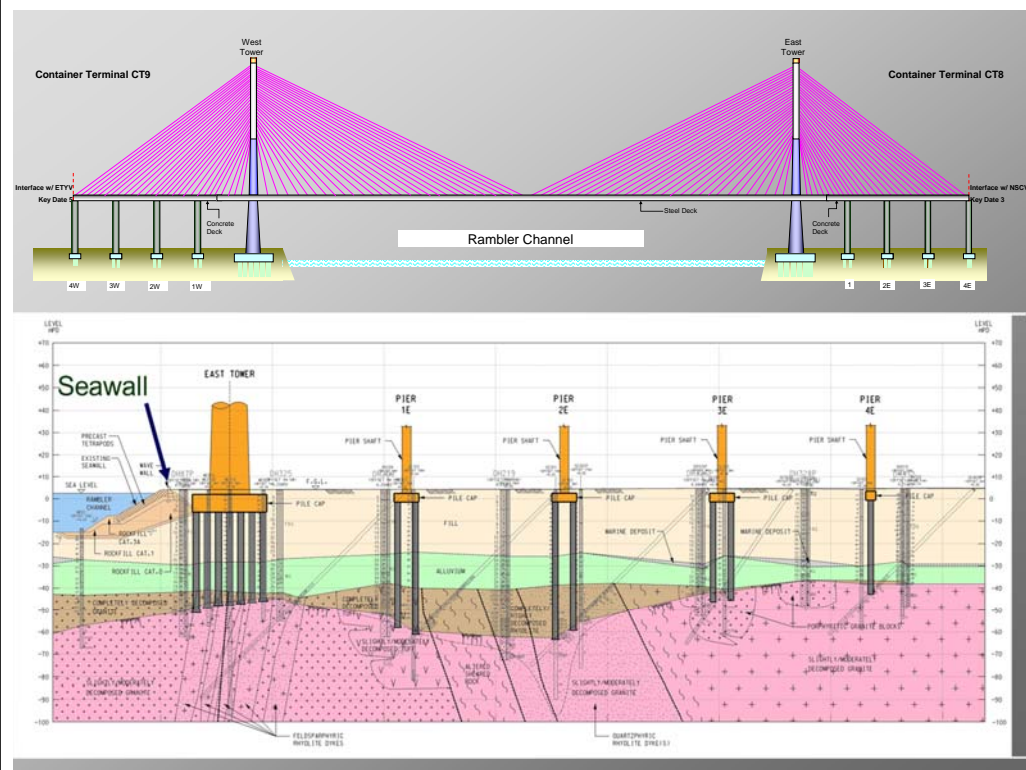
Forming of the tunnel portal



The launching gantry for the forming of the elevated carriageway in the form of a viaduct

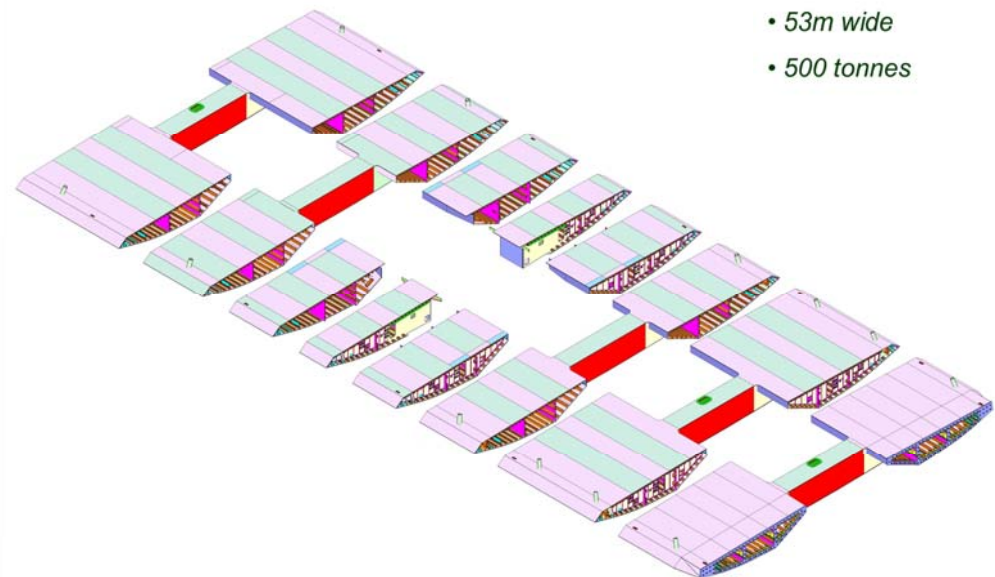


Stonecutters Bridge



Deck Segments

- 18m long
- 53m wide
- 500 tonnes







Viaduct crossing junction of Cheung Sha Wan Road and Lai Chi Kok Road as seen in 2004



Route 8, Butterfly Valley Interchange

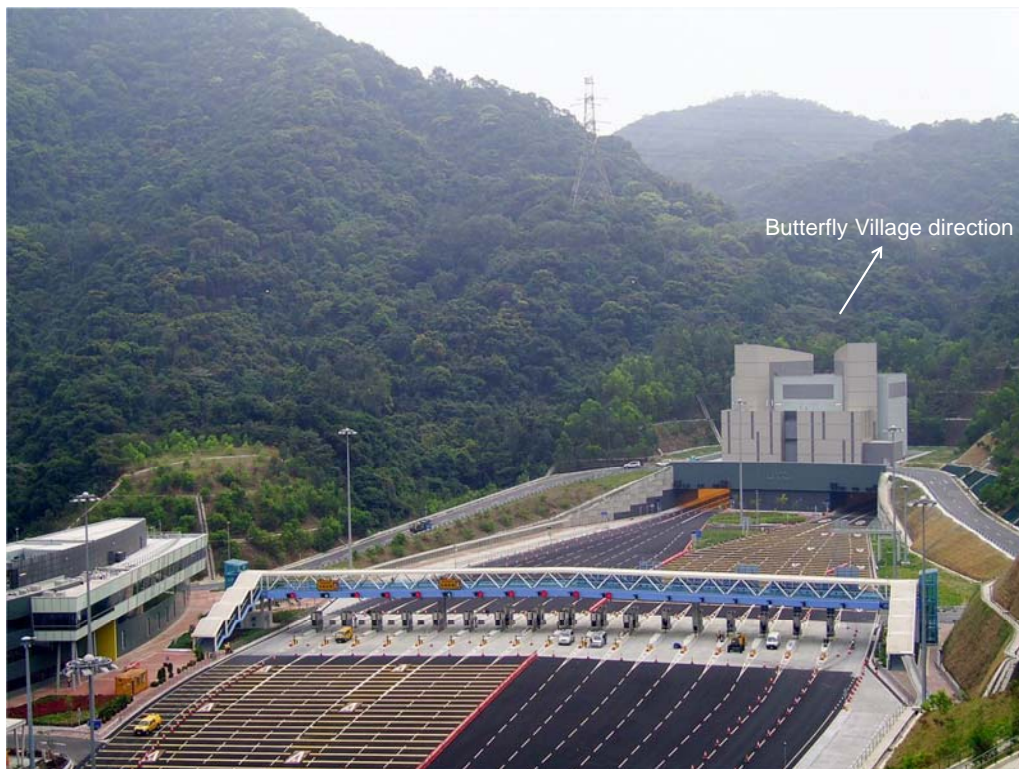
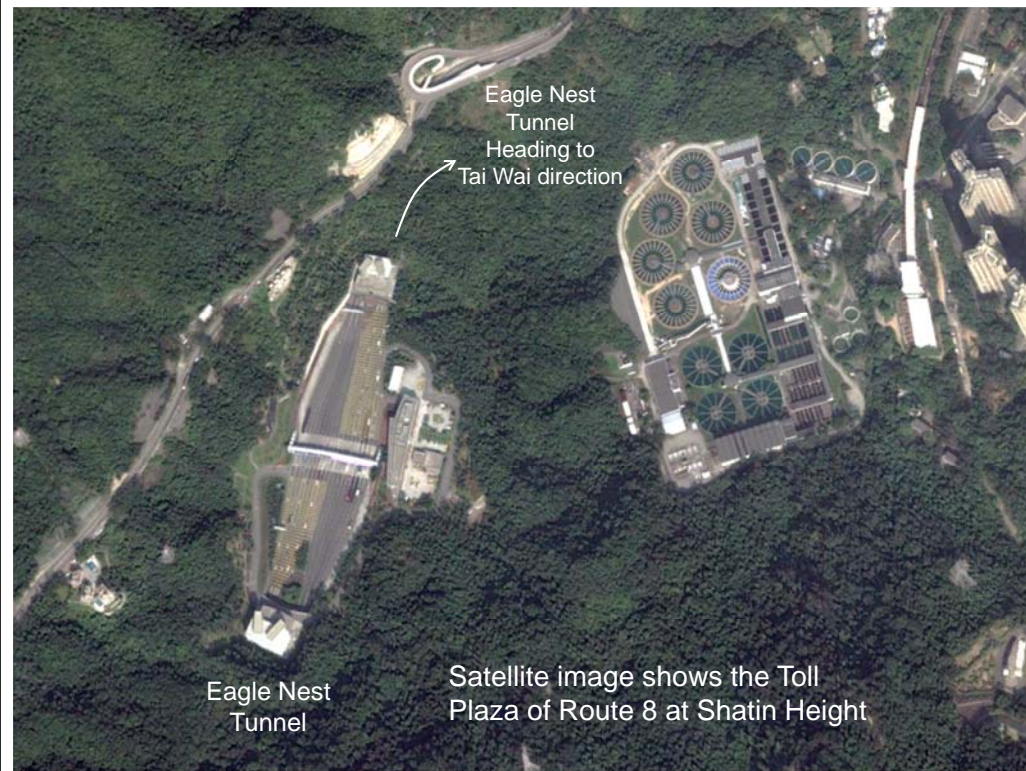




Forming the approach-road from Ching Cheung Road into the carriageway of Route 8 (at junction of the Interchange, 2005/6)

Junction of Ching Cheung Road & Route 8 as seen in mid 2007

Route 8, the Eagle Nest and Shatin Height tunnel





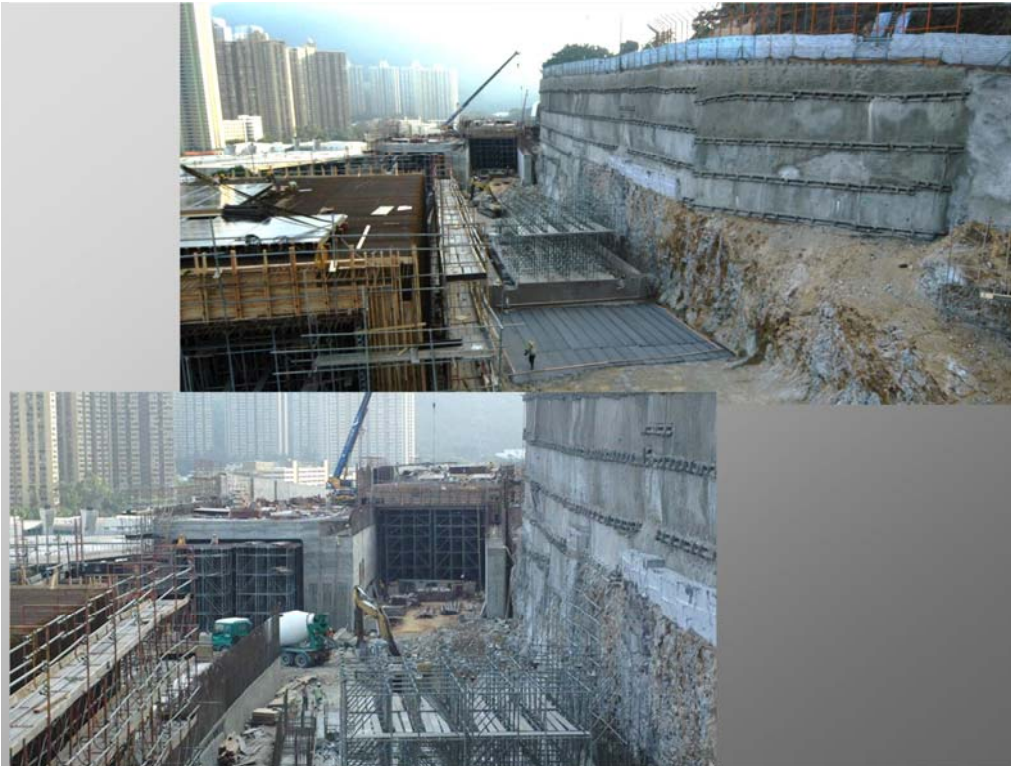
Portal of the Shatin Height tunnel at the Tai Wai approach

Joining Route 8 to the existing road system in Tai Wai

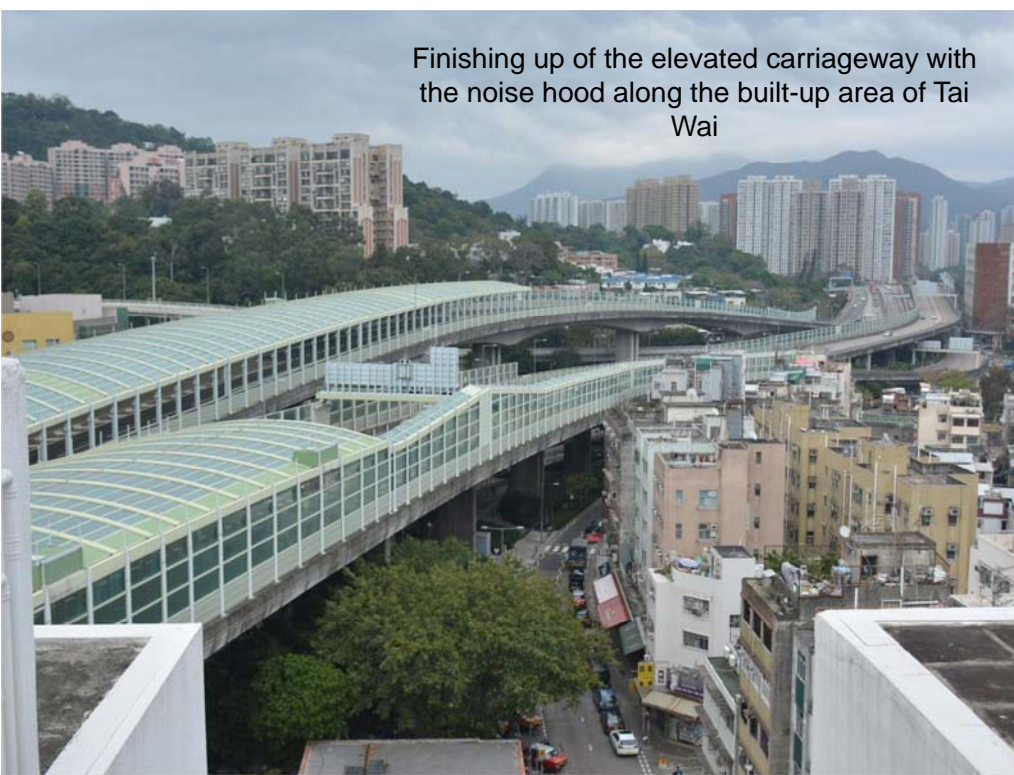


Viaduct crossing the servicing rail track of East Rail (2006)

Junction to the Shing Mun Tunnel



Finishing up of the elevated carriageway with the noise hood along the built-up area of Tai Wai



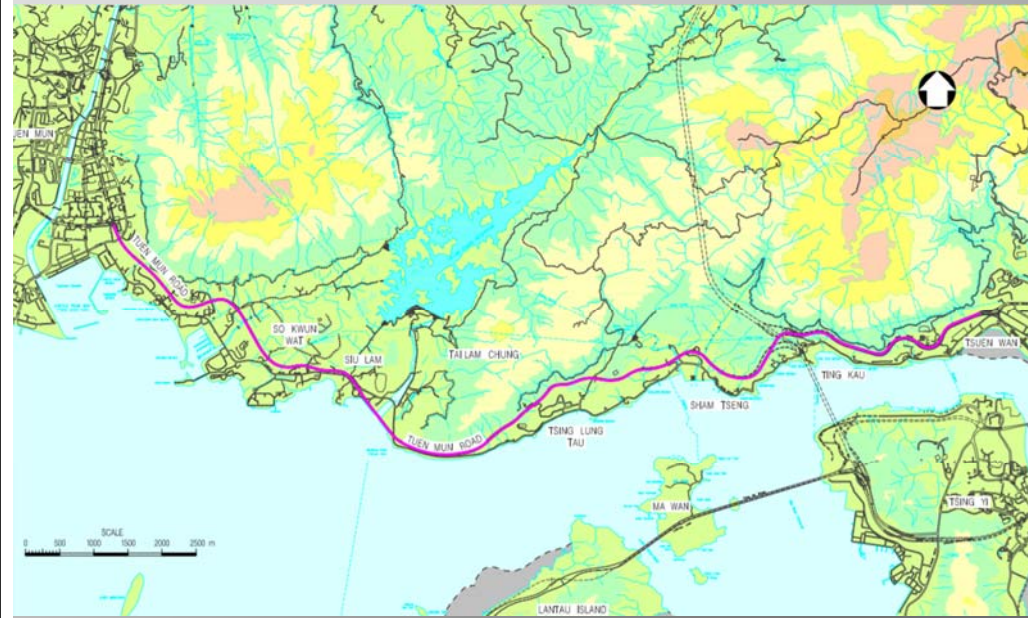
Some un-notice features of the Route 8 projects

Some un-notice features of the Route 8 projects – remarkable landscaping and pedestrian facilities



Reconstruction & Improvement of Tuen Mun Road (HK\$6.8 billion, 2008 – 2014)

- To bring the road up to the current standards as far as practicable;
- Reconstruction of pavement;
- Widening of traffic lanes; provision of hard shoulders;
- Improvement of sight lines, road curvature and super elevation;
- Upgrading the roadside slopes;
- and the traffic control and surveillance system and retrofitting of noise barriers and enclosures



Reconstruction and Improvement of Tuen Mun Road





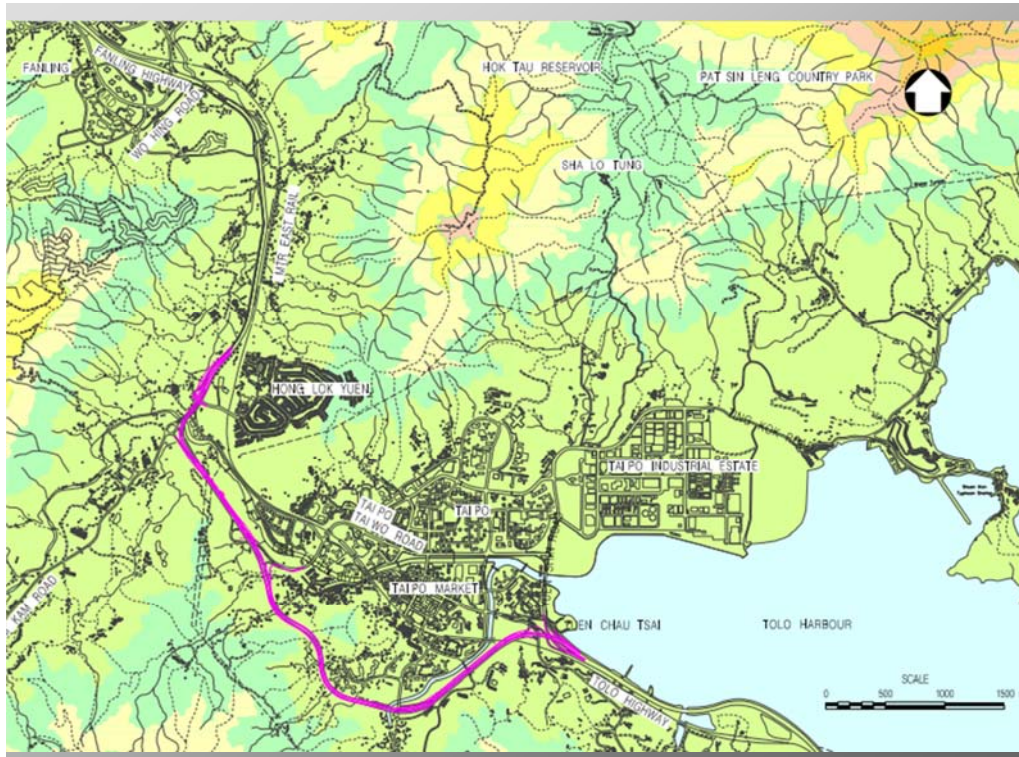




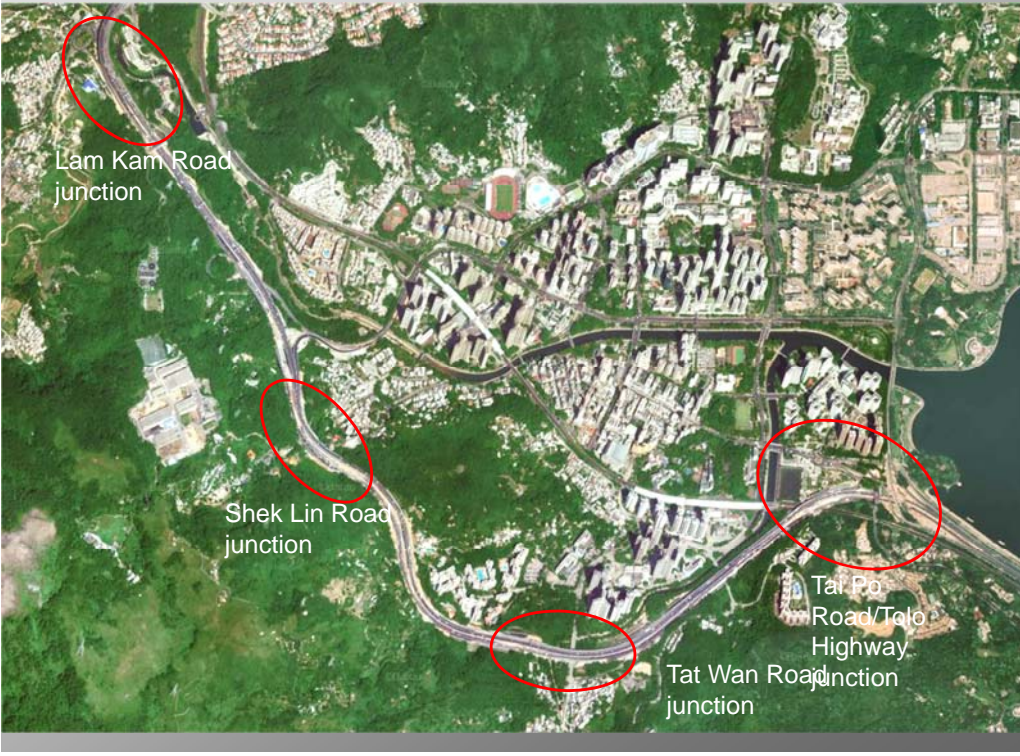
Widening of Tolo Highway/Fanling Highway between Island House Interchange and Tai Hang

(HK\$4.5 Billion, 2009 – 2014)

- Widening of the section of Tolo Highway between Island House Interchange and Tai Hang;
- widening and realignment of the associated slip roads at Island House Interchange, Lam Kam Road Interchange and Tai Po North Interchange;
- construction of 12 new vehicular bridges and modification of 7 existing vehicular bridges;
- demolition and reprovision of existing footbridges and vehicular bridge;
- erection of noise barriers;
- provision of a traffic control and surveillance system



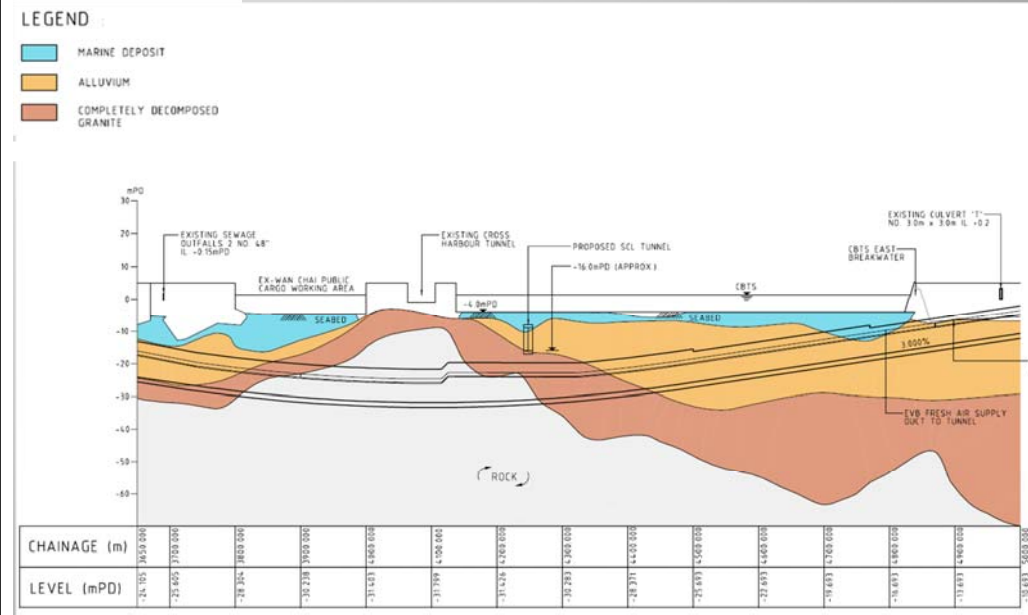
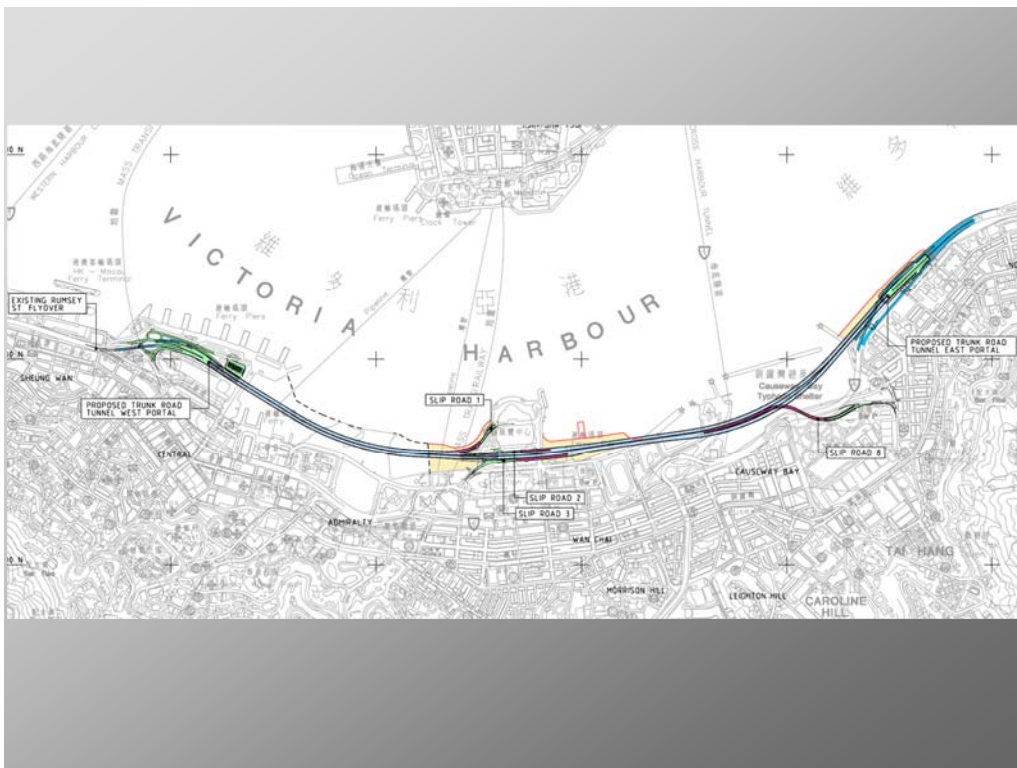
Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2

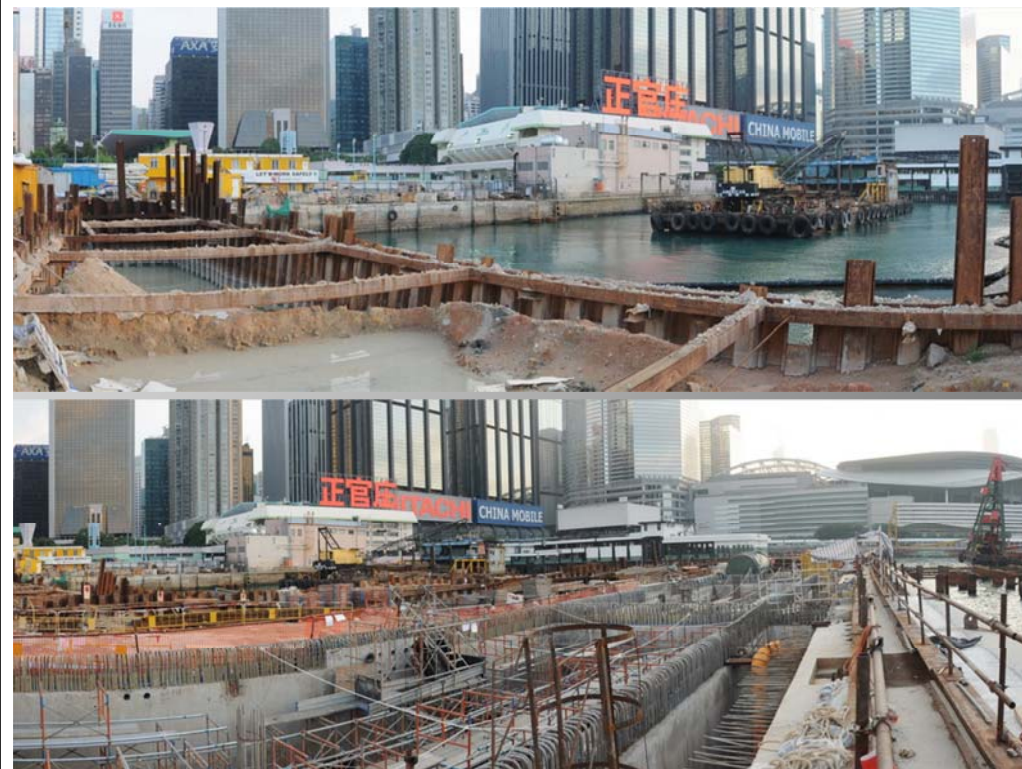
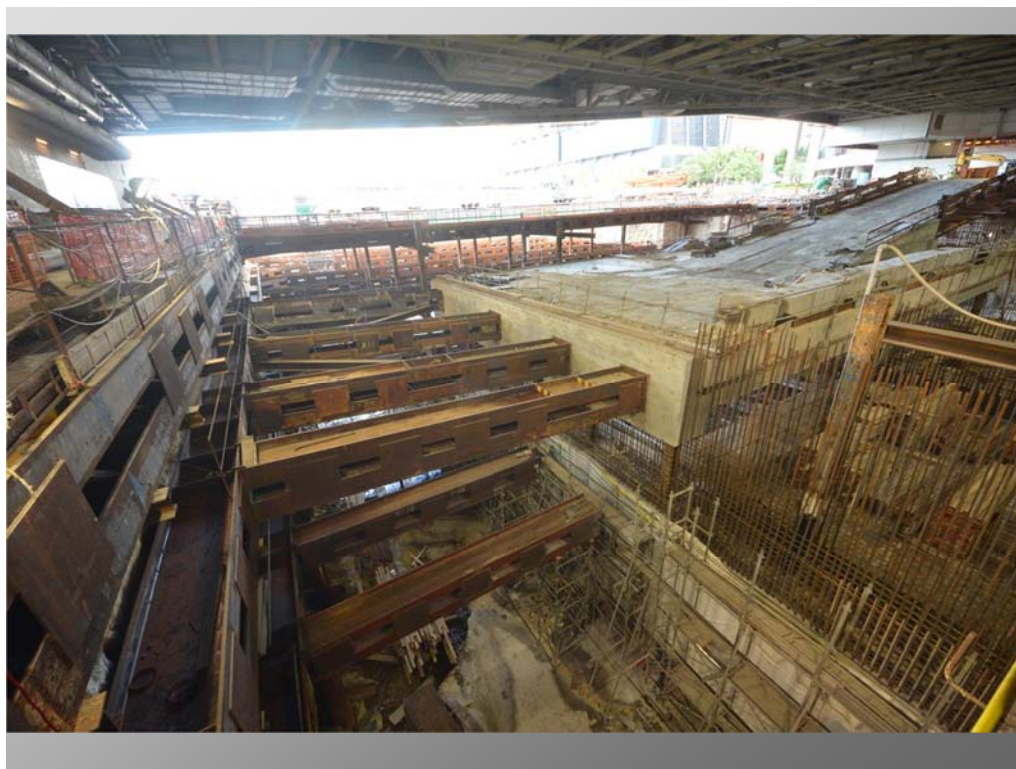
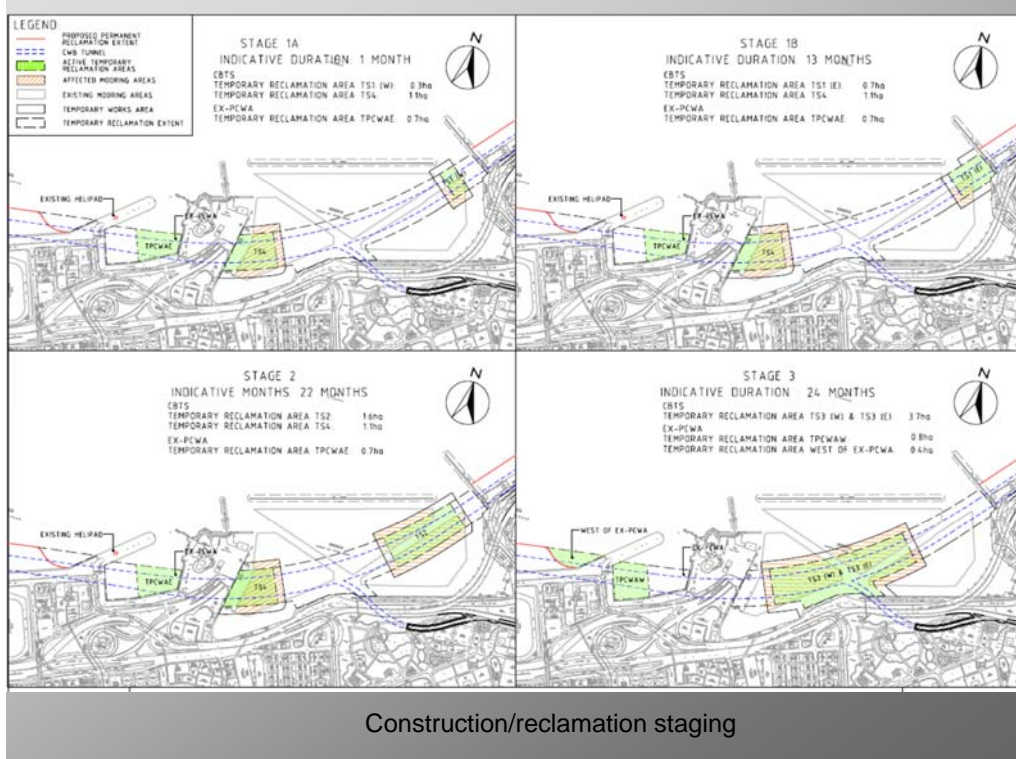


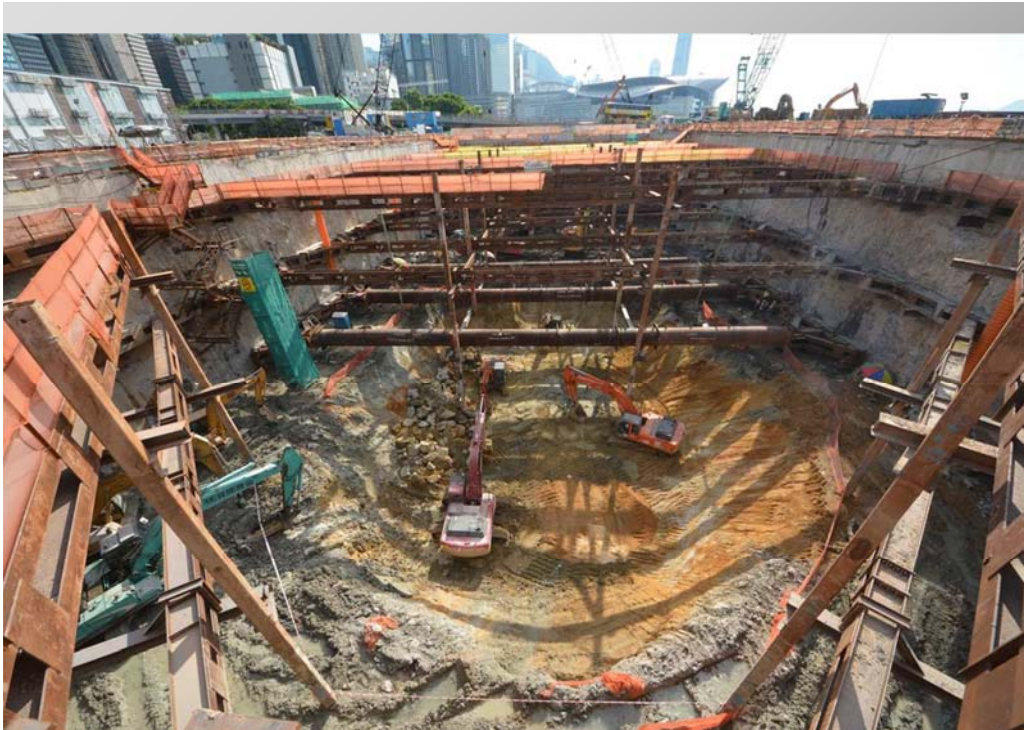
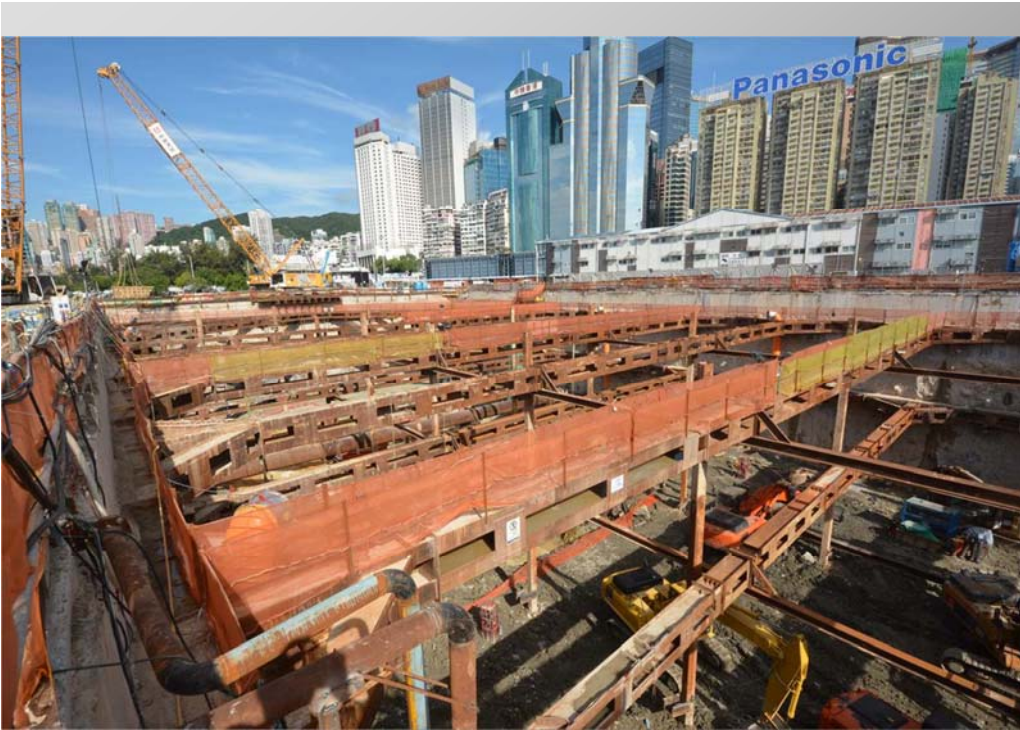
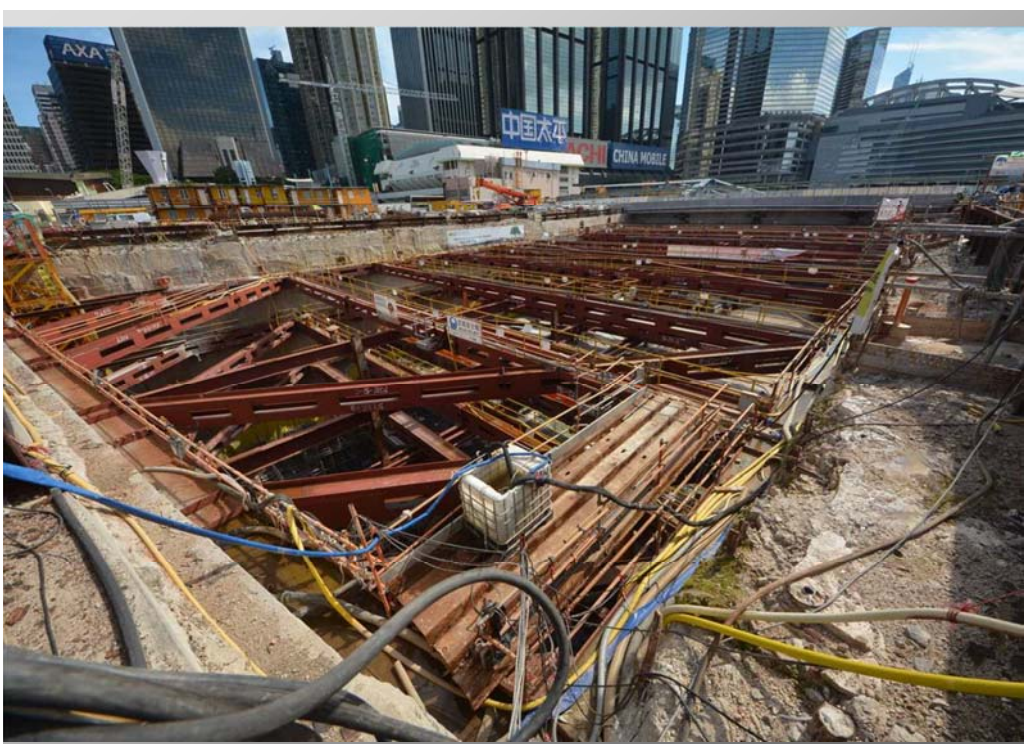


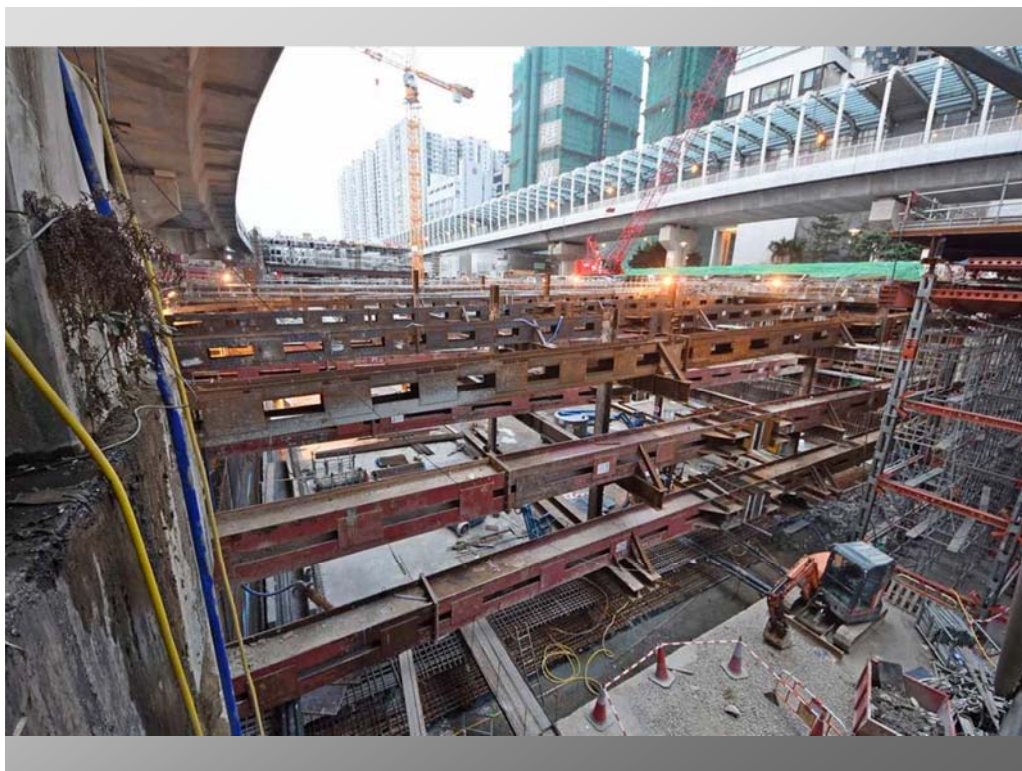
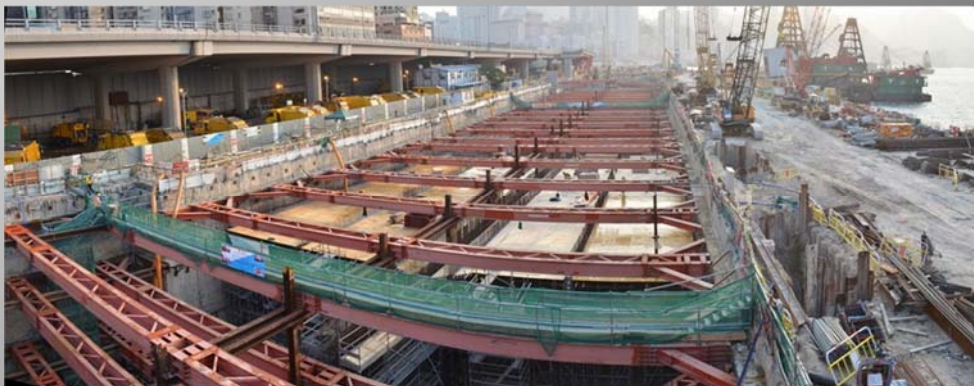
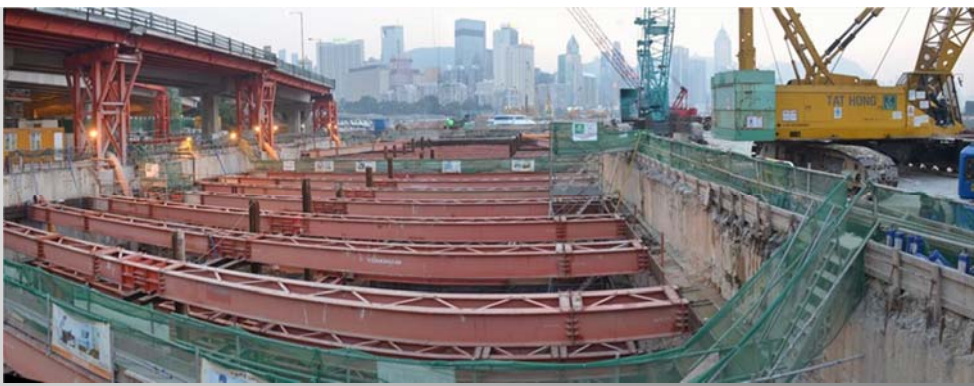
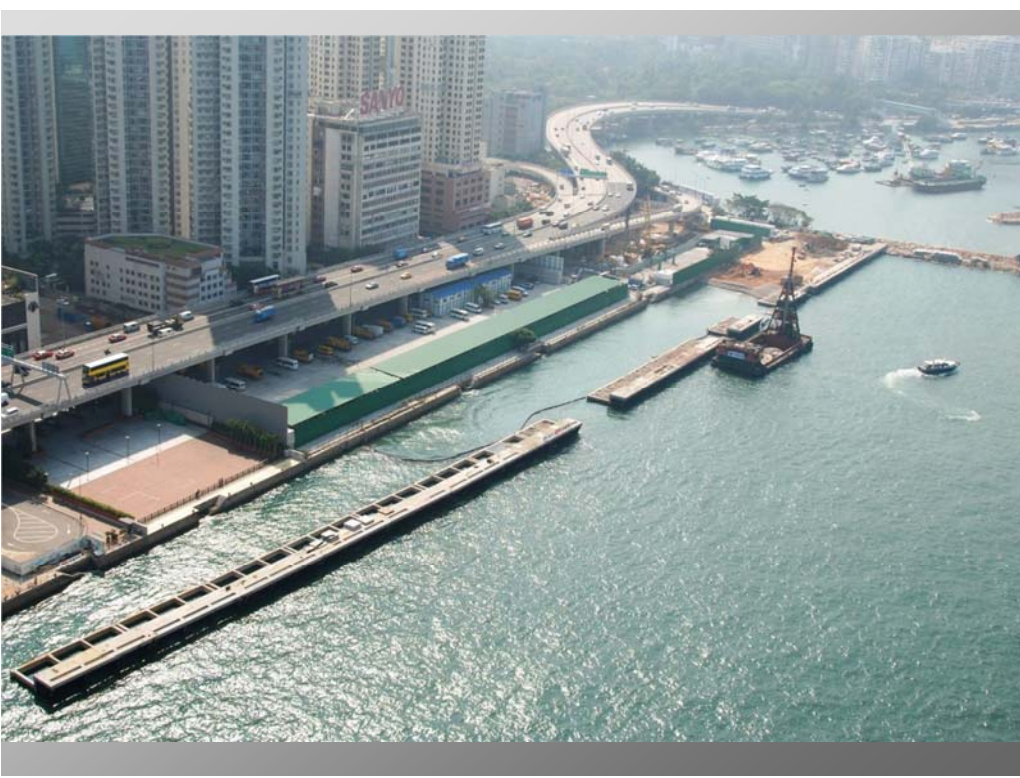


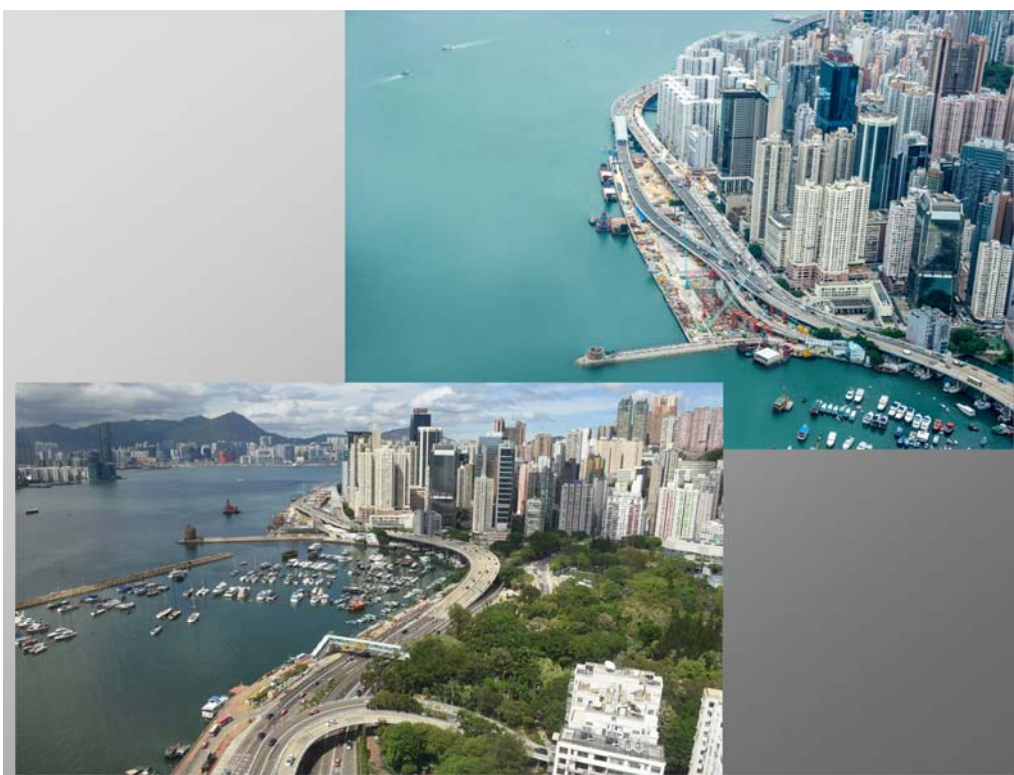
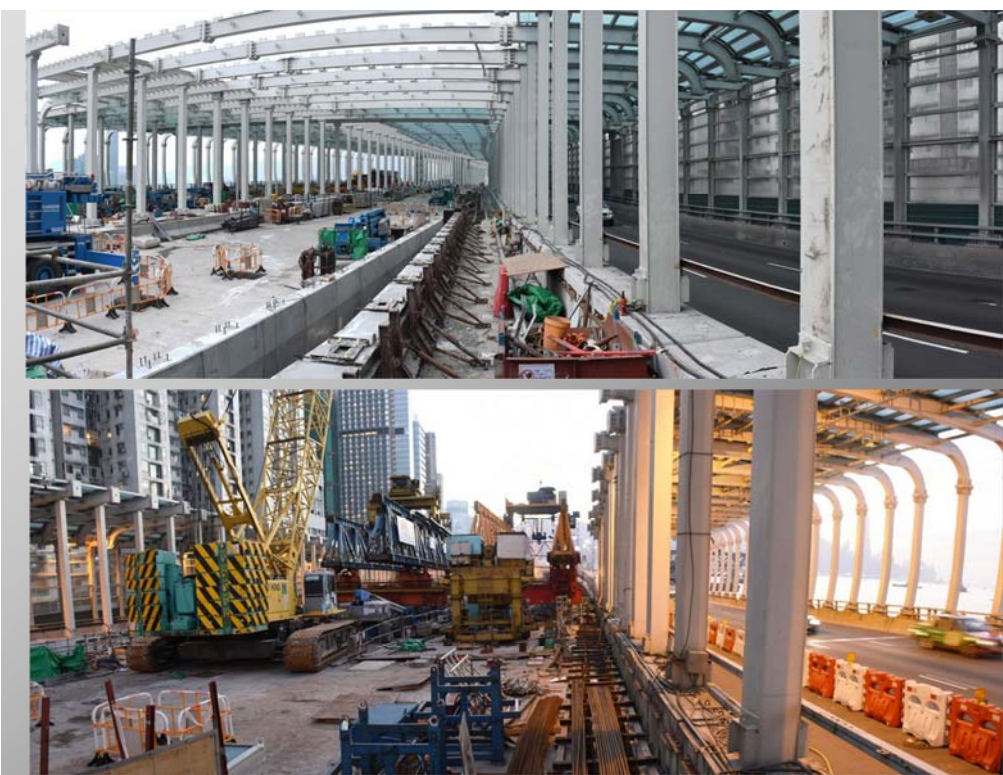
Central Wanchai Bypass (2010 – 2019)





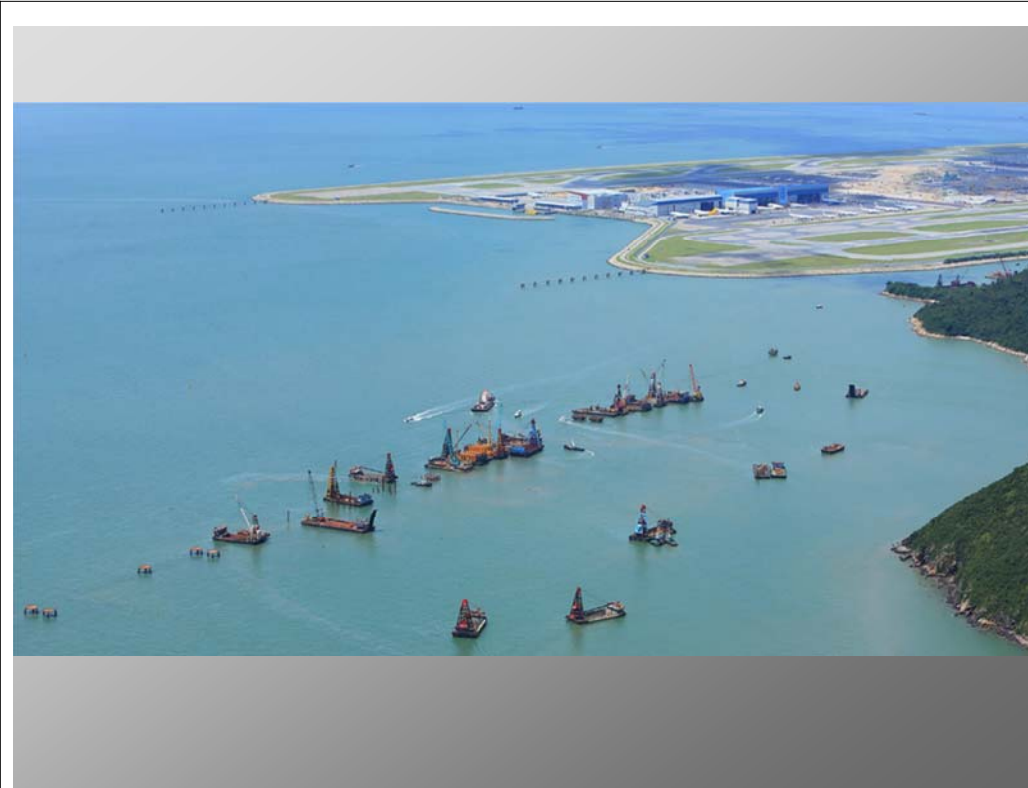
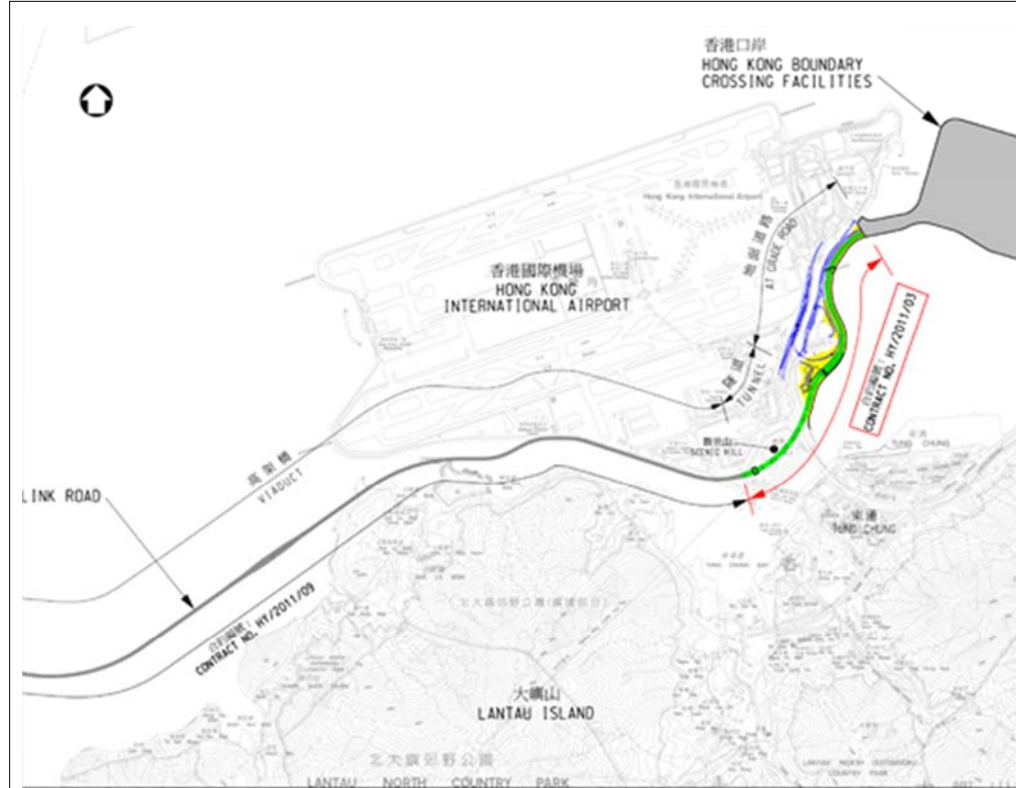




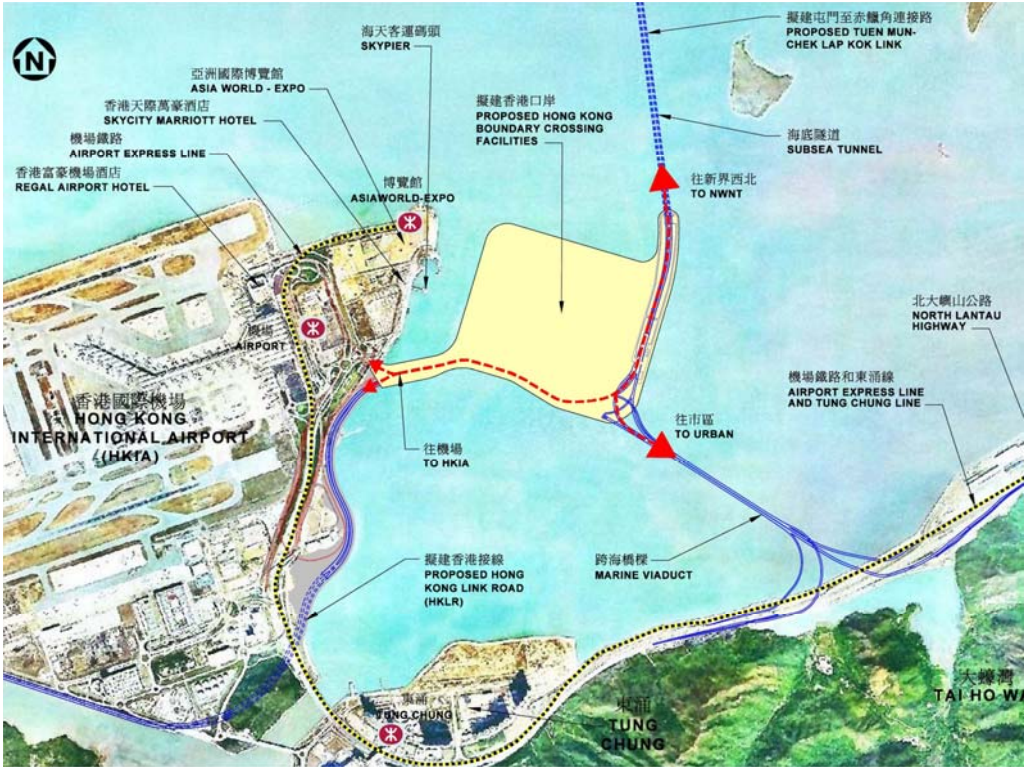


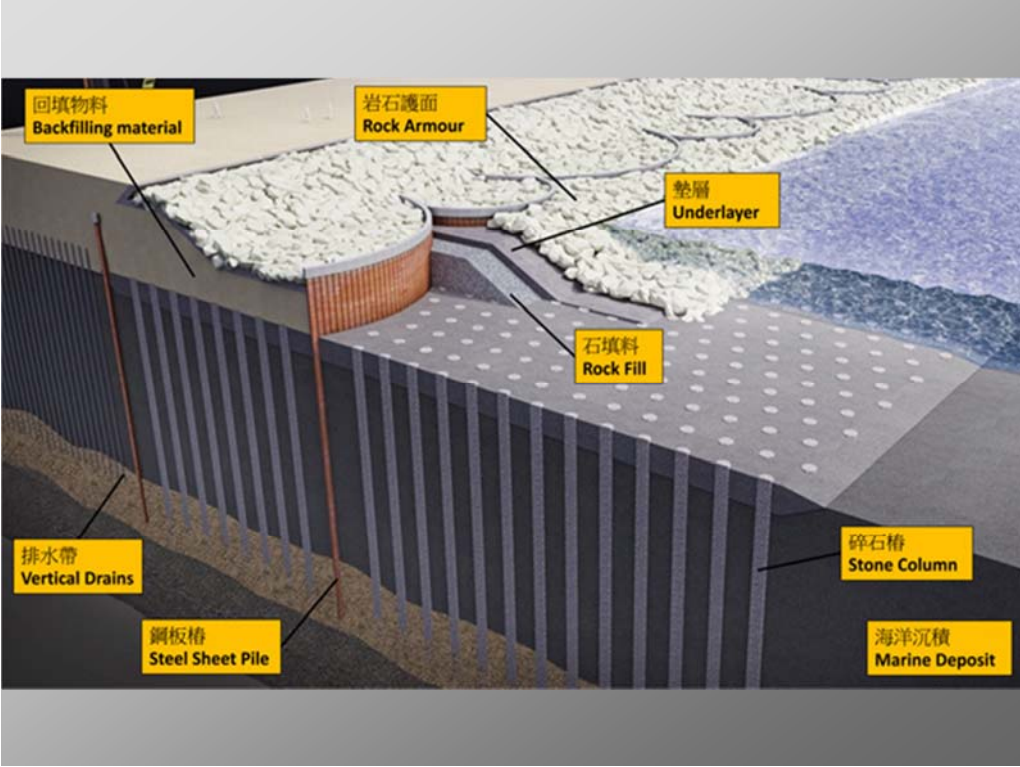
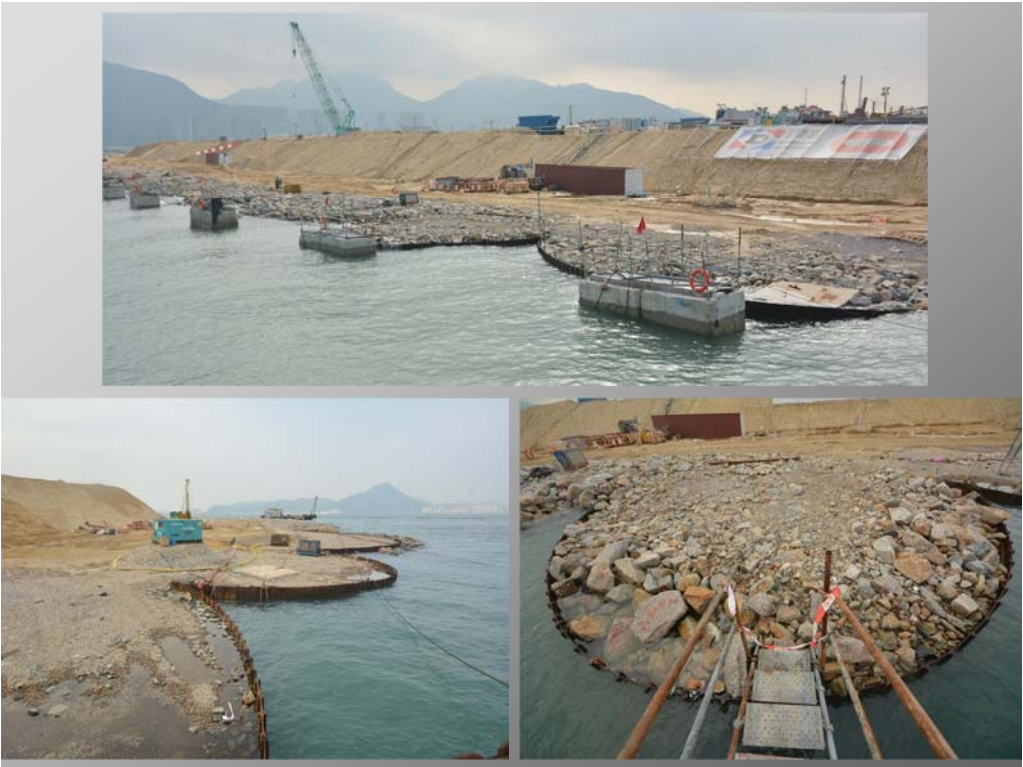
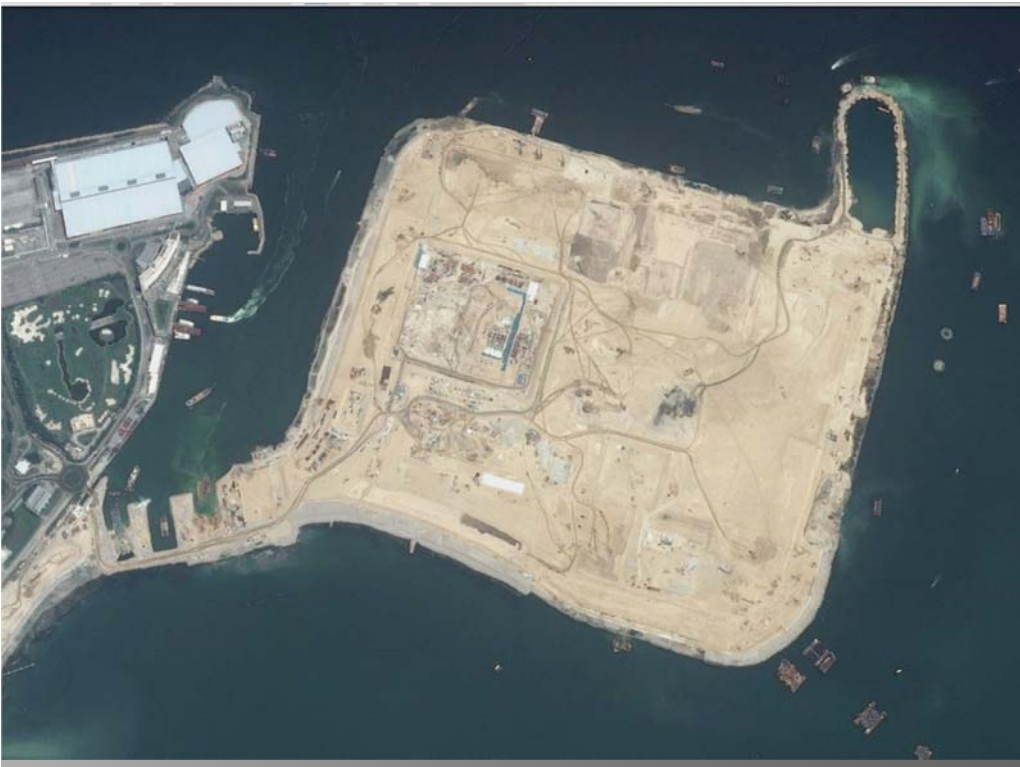
HK-Zhuhai-Macao Bridge (2011 – 2019)



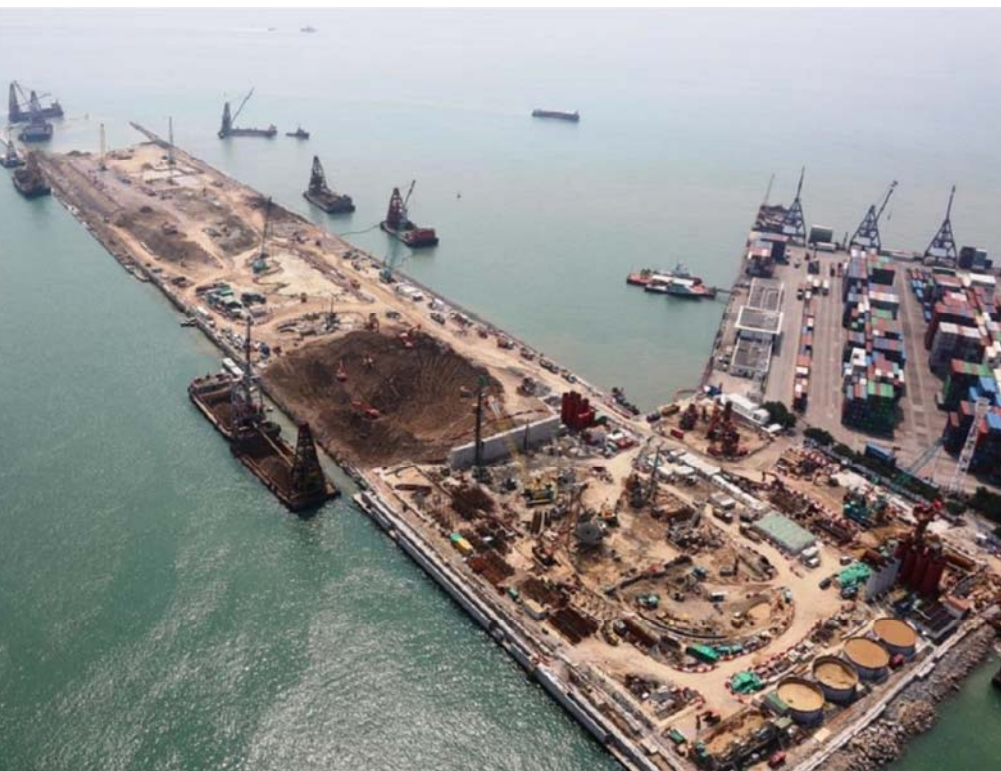












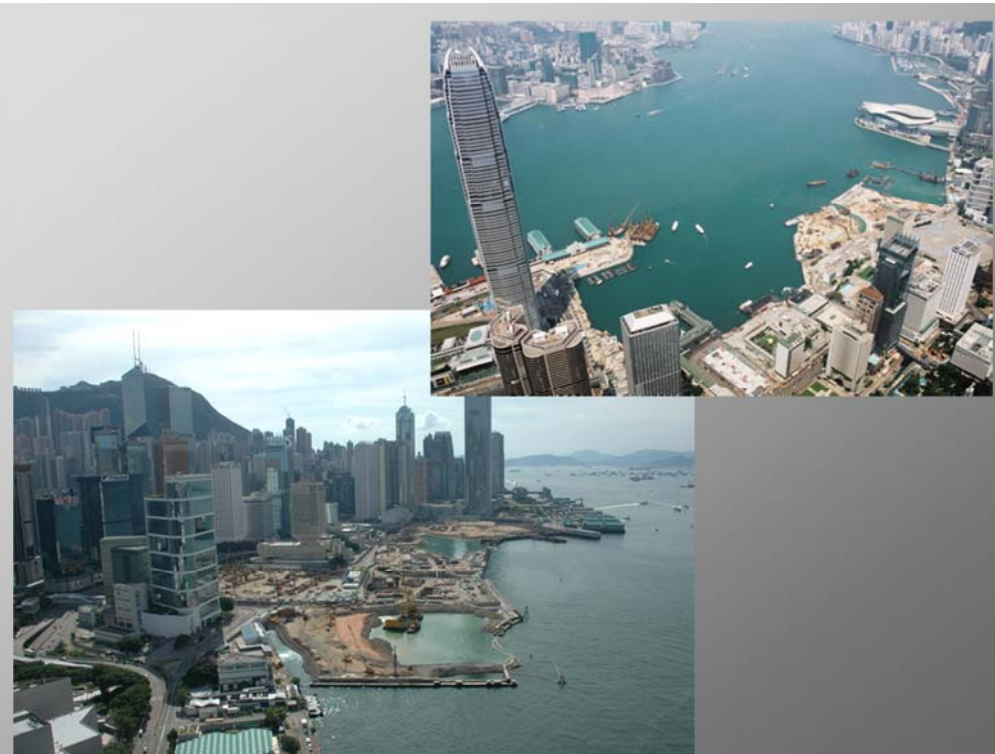
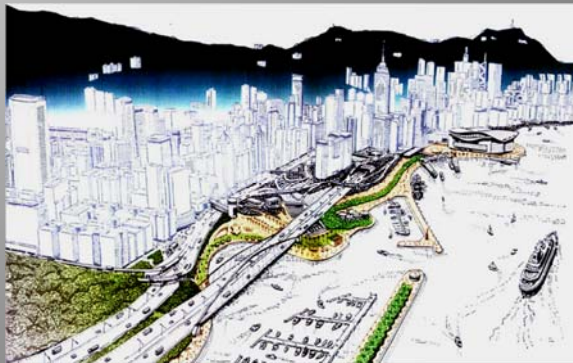


Part 3

Major Land Formation Projects

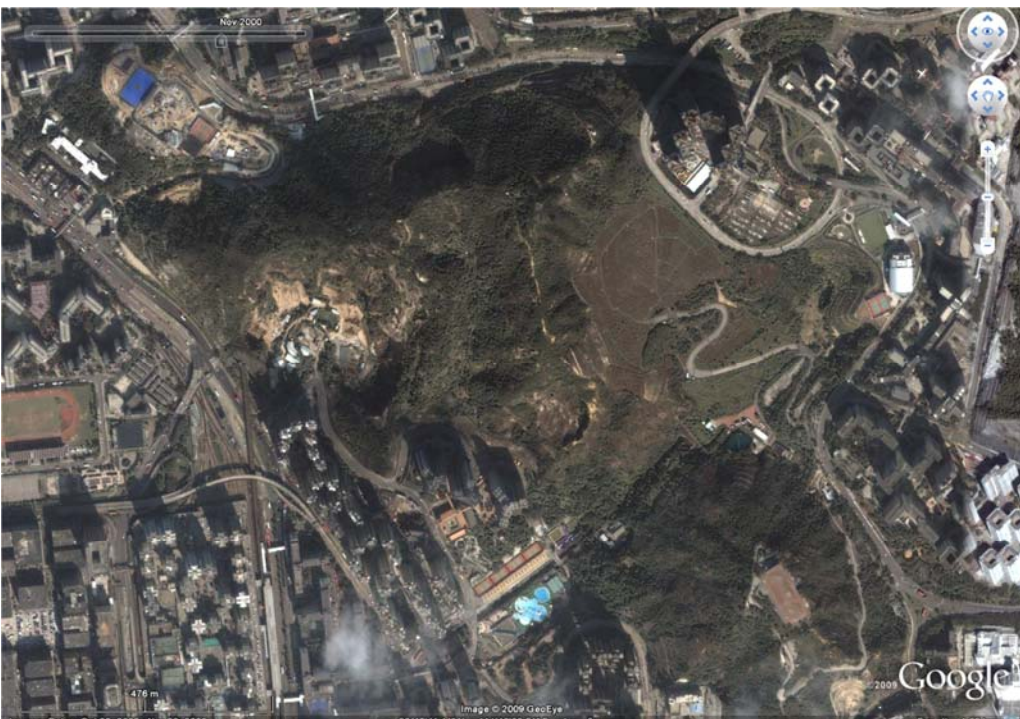


Various proposal for the future harbourfront after the completion of Central-Wanchai Reclamation

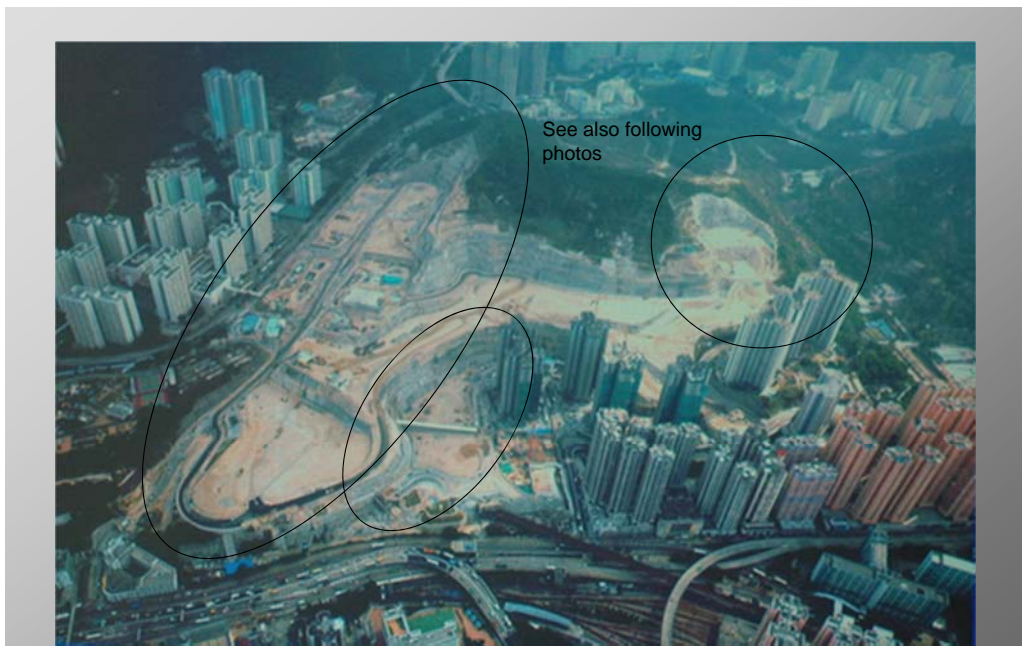




Central Reclamation Phase III (2007)



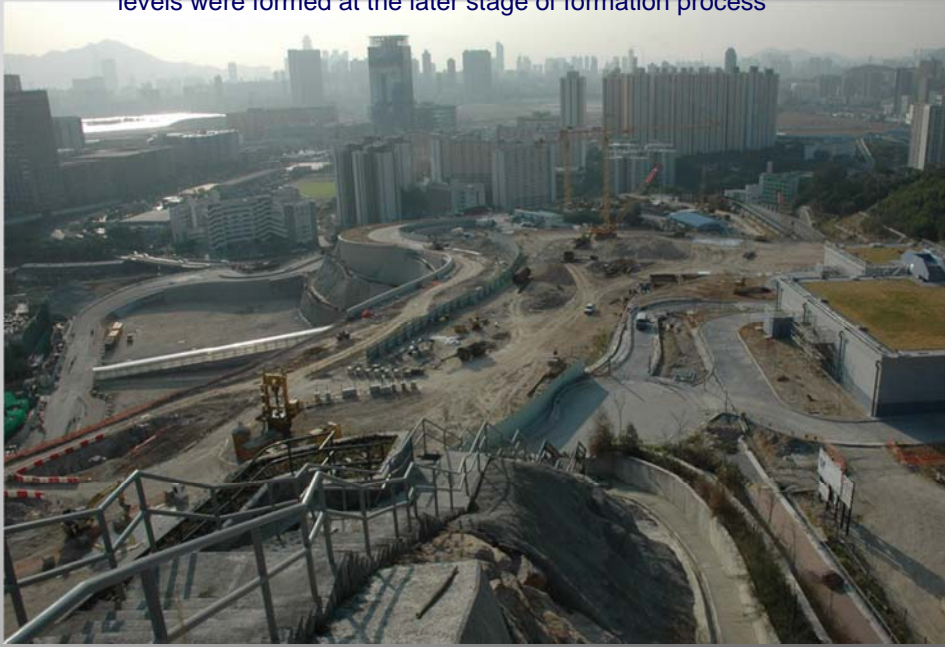
Choi Wan area in 2000



See also following photos

Forming of large piece of terraced land to accommodate new building developments (Choi Wan formation)

Terraces (smaller strips of flatter land platform) at various levels were formed at the later stage of formation process



New land being formed near Jordan Valley





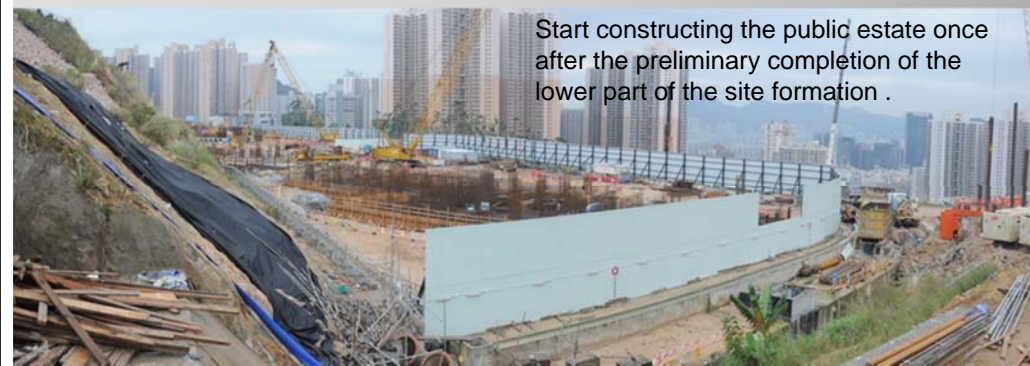
Another example of large scale formation project - The Anderson Road site formation



The actual view on site

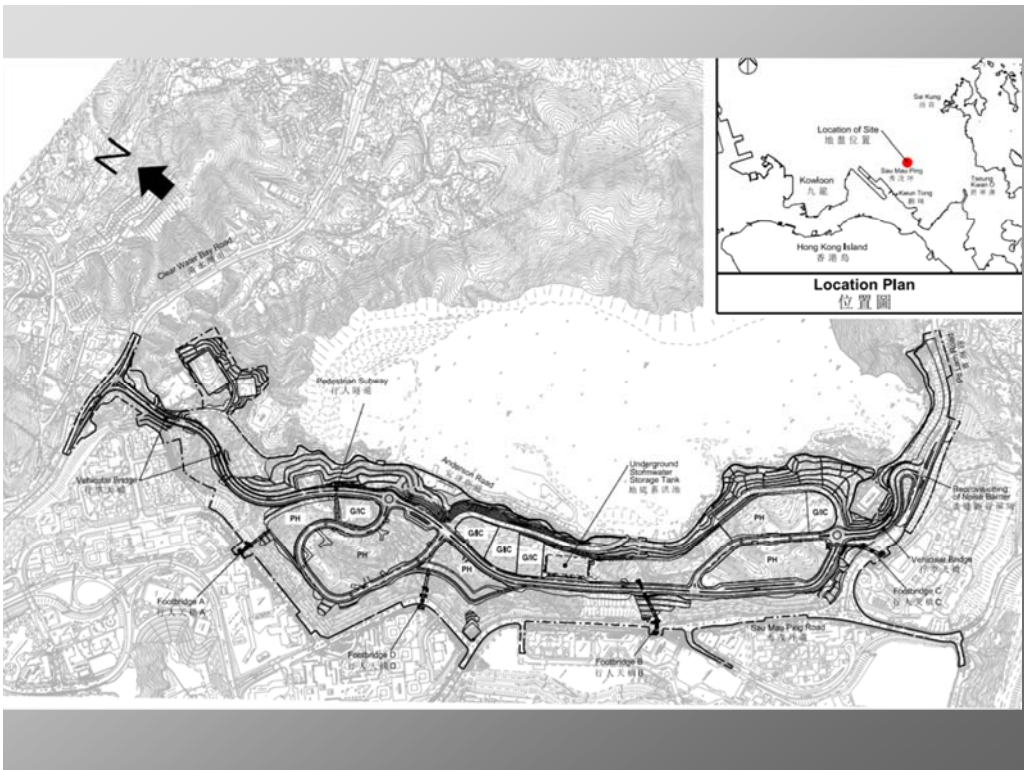


The same location as seen in
mid 2011 and mid 2012



Start constructing the public estate once
after the preliminary completion of the
lower part of the site formation .







Part 4

Ten Major Infrastructure Projects

Major projects involved in the Kai Tak Developments

This presentation, prepared by Raymond Wong of City University, tries to briefly summary the major projects being carries out or under active planning since the introduction of the Kai Tak Development Plan since end of 2000s.

July
2016

Artistic view of the future terminal



Construction of the berth deck (December 2011)





Forming the floor deck using precast beams and floor planks with RC topping



Project Title

Reconstruction and Rehabilitation of Kai Tak Nullah from Tung Kwong Road to Prince Edward Road East - main works

Project Scope

The project includes reconstruction and rehabilitation of a section of about 500m long Kai Tak Nullah from Tung Kwong Road to Prince Edward Road East[More](#)

Major Improvements and Benefits

Improve the drainage capacity and rehabilitate the section of Kai Tak Nullah from Tung Kwong Road to Prince Edward Road East

Consultants

Atkins China Limited

Contractors

DC/2013/03 - China Road and Bridge Corporation

Contract No.

DC/2013/03

Project Commencement Date

30 December 2013

Project Completion Date

End 2017

Approved Project estimate

About \$1,200 million

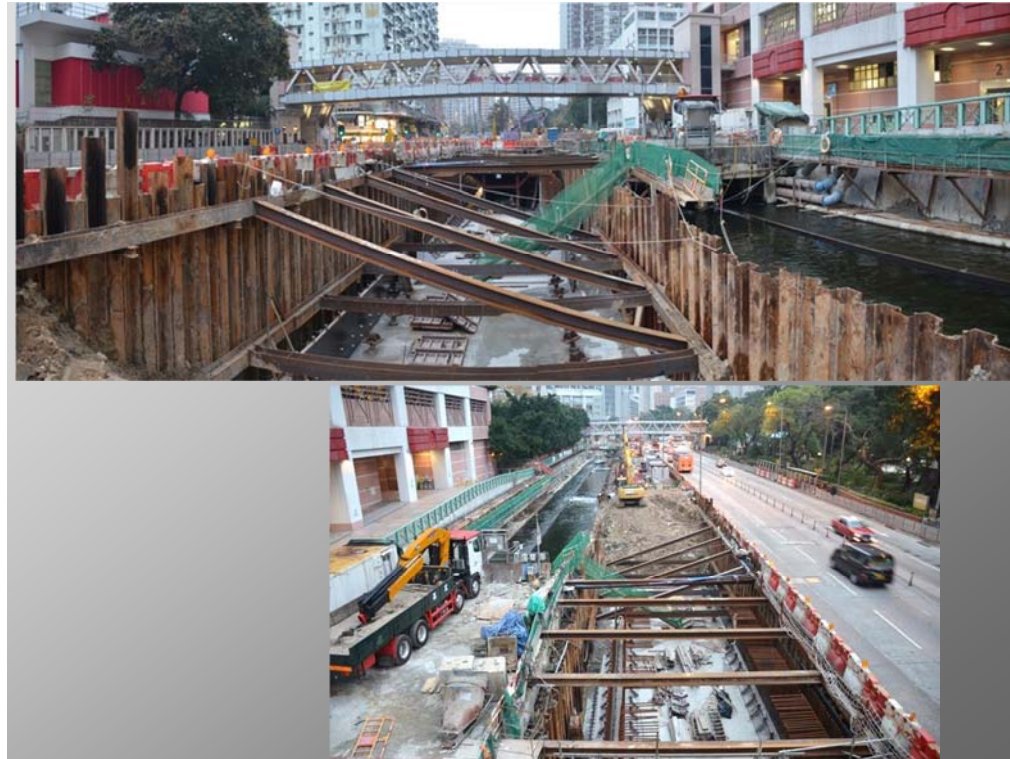
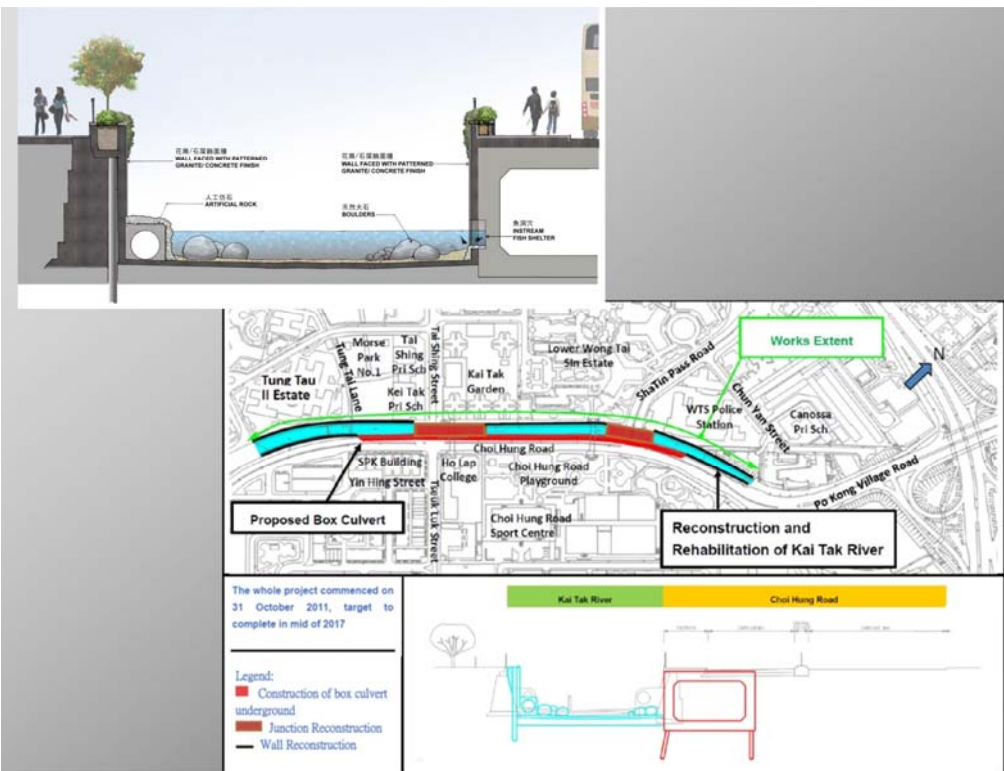
Controlling Division

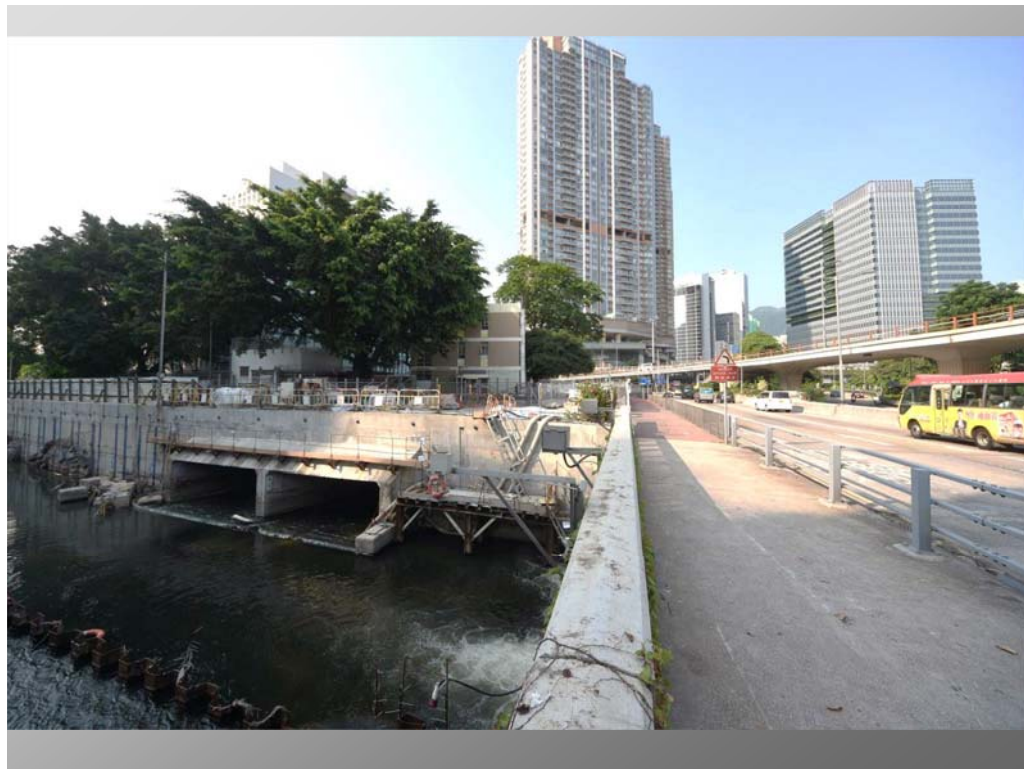
Project Management Division

Type

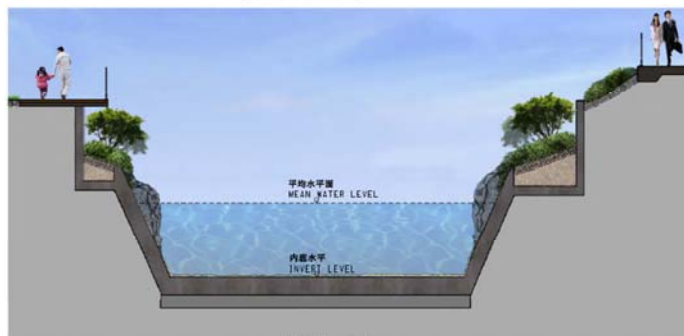
Flood Prevention

Major projects 6





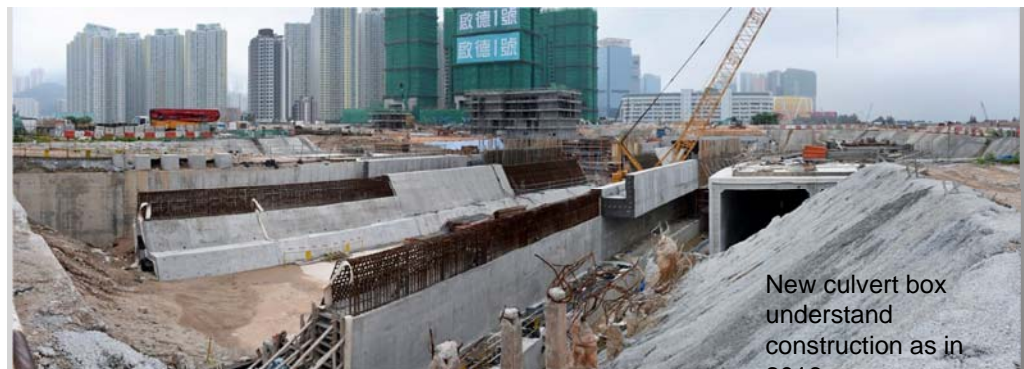
立視圖
ELEVATION



典型橫切面 A-A
TYPICAL SECTION A-A

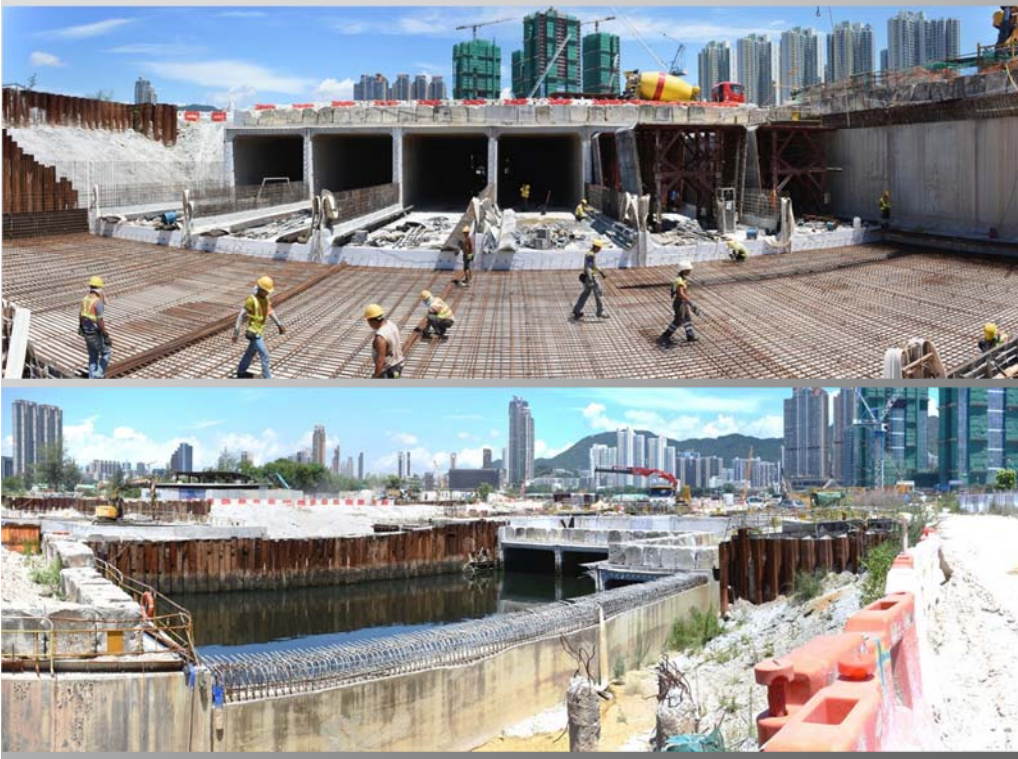
附件二 ENCLOSURE 2

圖則名稱 Drawing title
啟德明渠重建及改善工程
- 擬建排水道構思圖
RECONSTRUCTION AND
UPGRADING OF KAI TAK NUI LAH
- ARTIST'S IMPRESSION OF
PROPOSED DRAINAGE CHANNEL

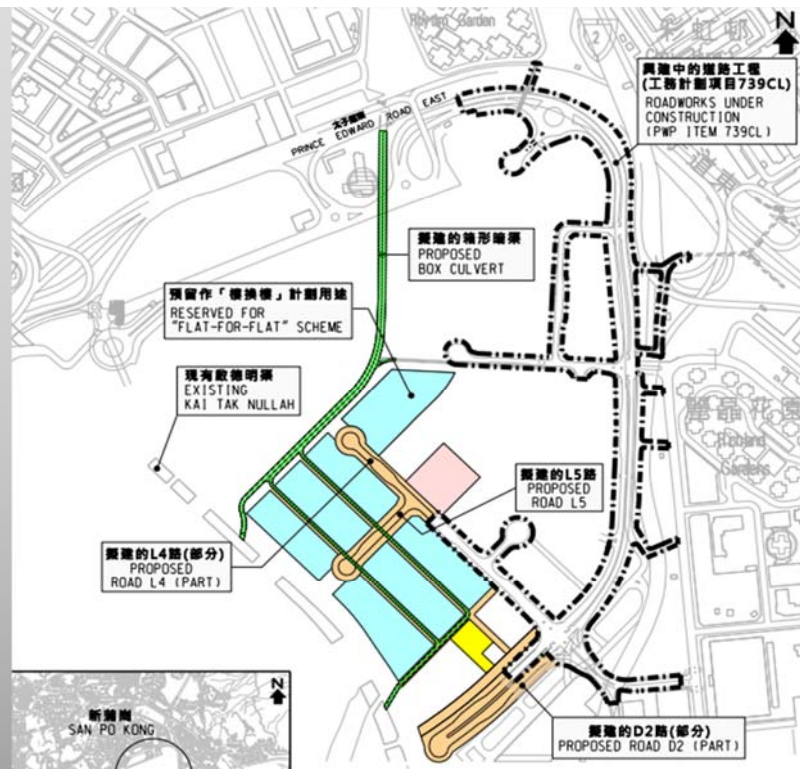


New culvert box
understand
construction as in
2016





Other residential developments in the North Apron of Kai Tak



Construction of the Tak Long Estate as in 2012



Other supportive works carried out since 2010 as the advance stage of the Kai Tak Development – construction of a series of public housings.



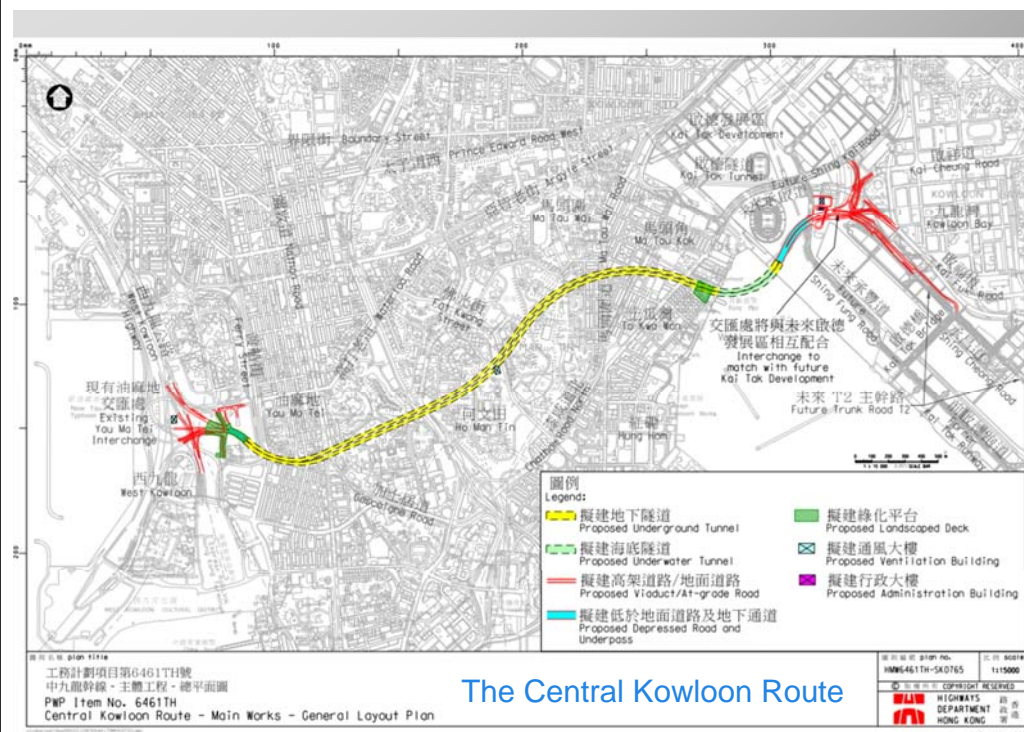
Other supportive works carried out since 2010 as the advance stage of the Kai Tak Development – construction of a series of public housings.

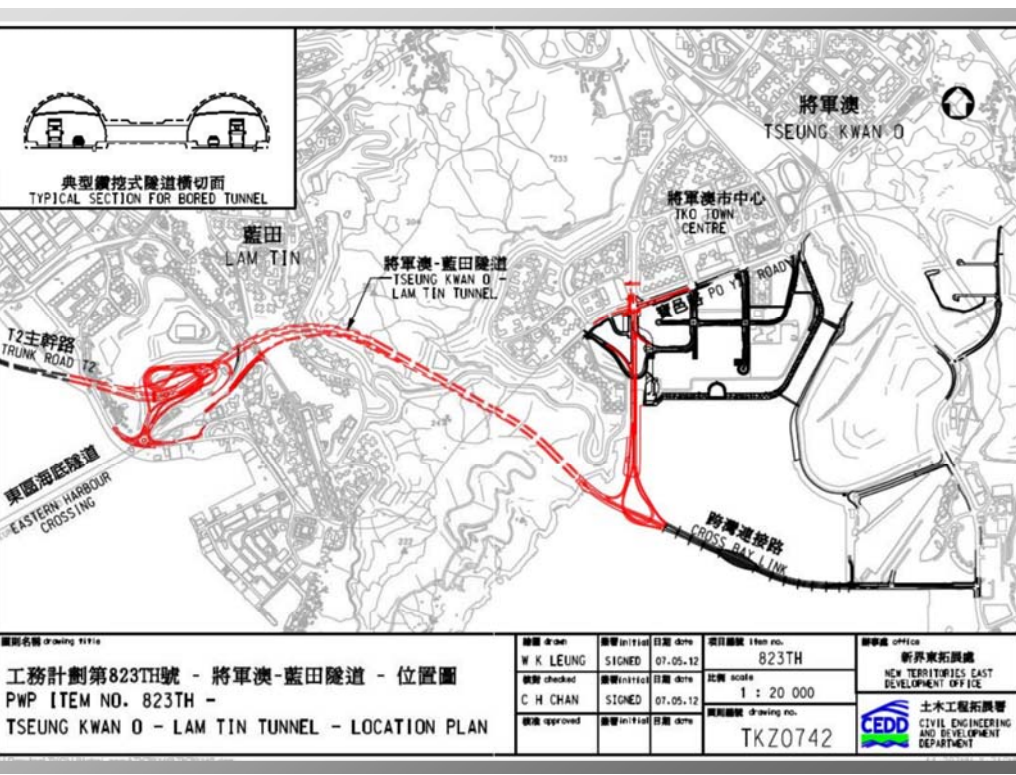
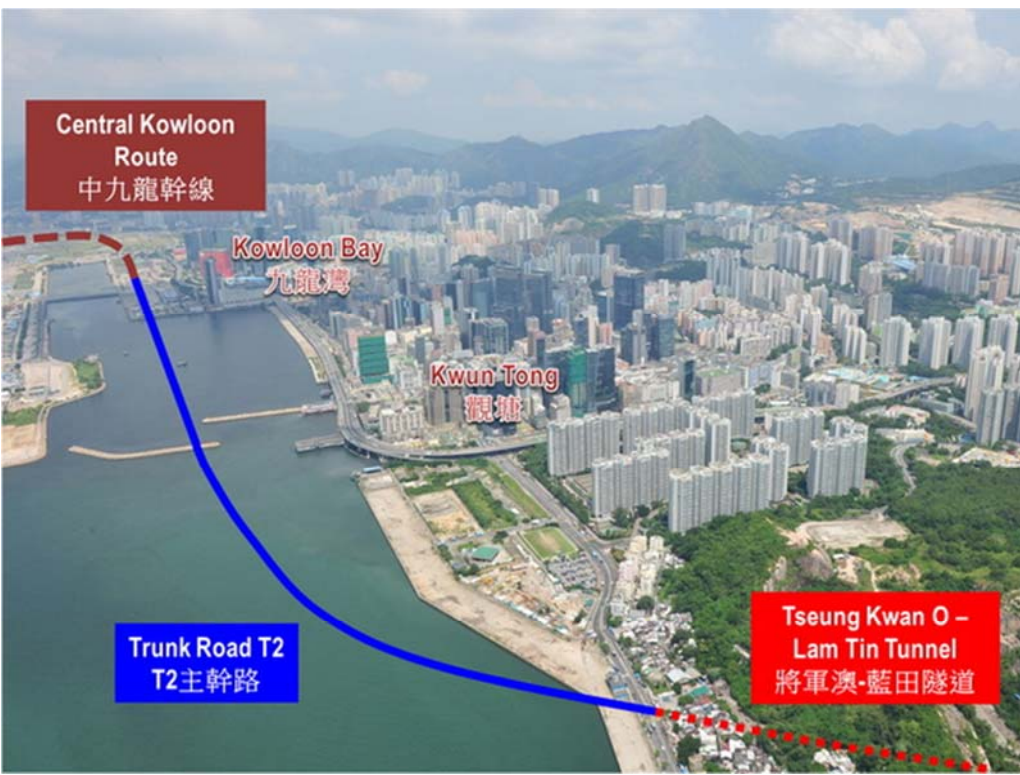
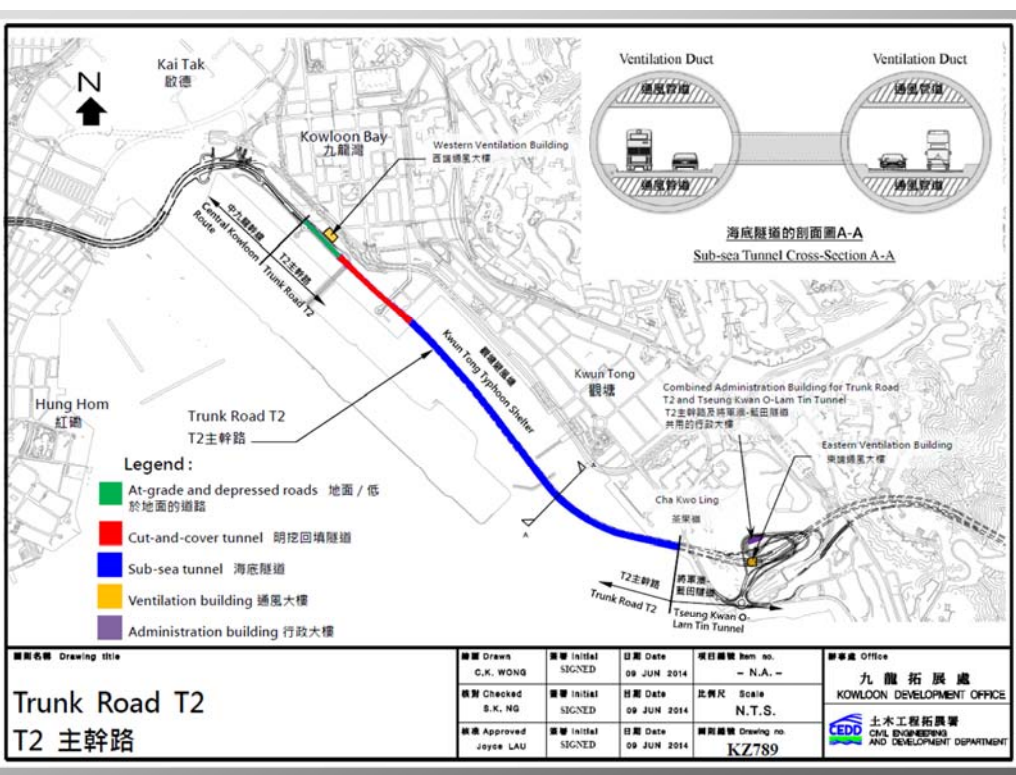
啟德發展區住宅地皮分佈



煥然一居

Other future projects
under planning

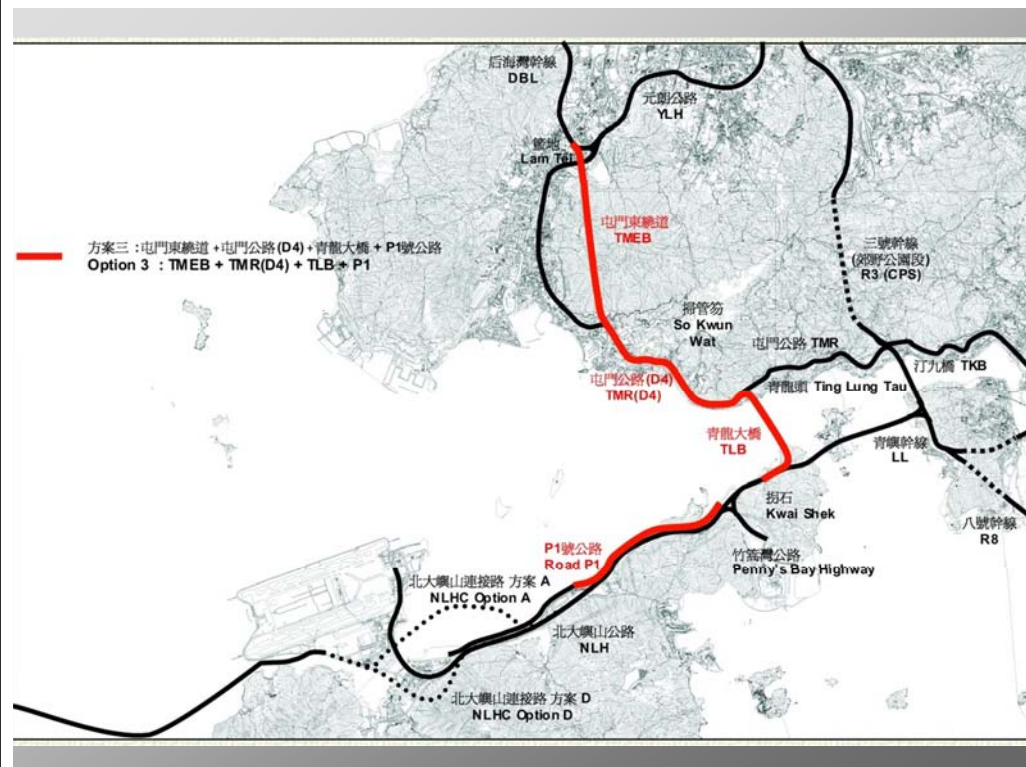






圖例:
Legends:

	合約編號: NE/2015/01 Contract No.		合約編號: NE/2015/02 Contract No.		合約編號: NE/2015/03 Contract No.
	合約編號: NE/2017/01 Contract No.		合約編號: NE/2017/02 Contract No.		



縮短新界西北與機場距離
Saving between
NWNT and Airport
~ 22 公里 km

往來深港西部通道
To/From HK-SWC

屯門西繞道
TMWB

屯門北
Tuen Mun
North

屯門南
Tuen Mun
South

現時路線
Existing Route

新建路線
New Route

屯門至赤鱗角連接路
TM-CLKL

香港國際機場
Hong Kong
International Airport

東涌新市鎮
Tung Chung New Town

End of Presentation

In fact, there are much more
to tell. Perhaps, wait for the
next session of my talks