

A Review on the Recent Large Scale Infrastructure Projects 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 (previous Aldrich Village, Choi Wan site formation)
4. New Town development projects
5. Environmental and Sewage projects
6. General urban facilities including water and power supply
7. Other strategic development (Cyberport, Disney Land Theme Park, West Kowloon Cultural District)

Formation of the Shatin New Town in the late 1970s





Shatin in 2000



Formation of Tuen Mun New Town in the early 1980s





Development along
Tuen Mun-Yuen
Long Corridor



Formation of Tai Po
New Town in the early
1980s and an aerial
view of the district as
seen in 2000



Tolo Harbour Highways in late 1990s



Ma On Shan and Tolo Harbour in early 2000s



Major Infrastructure Development projects since 1990

1. Airport Core Projects
2. Strategic/General highway projects
3. Strategic railway projects
4. Strategic developments to enhance the overall economic structure of Hong Kong

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

Major Highway projects completed since 90s

1. Tsuen Wan/Shatin Connection (Route 5, including Shing Mun Tunnel, 1990)
2. Kwun Tong Bypass (1991)
3. Yuen Long Highway, including Au Tau Interchange (1991 – 1994, 2001 – 2006)
4. Improvement/Widening of Tuen Mun Highway (1996)
5. Hung Hom Bypass and Princess Margaret Road Link
6. Route 3 (Country Park Section, including Tai Lam Tunnel, 1998)

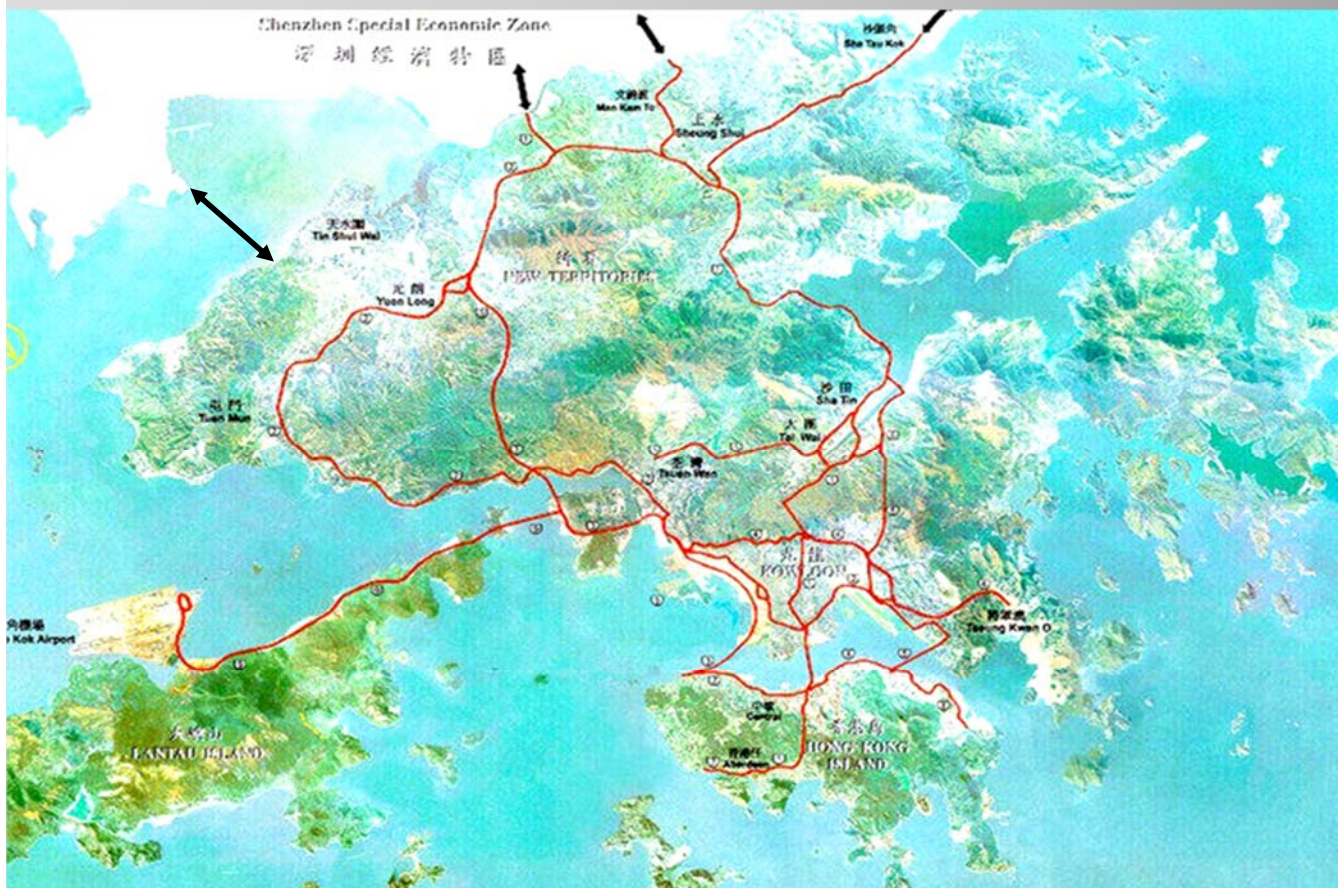
Major Highway projects completed since 90s

7. Tsing Yi North Coastal Road (2001)
8. Improvements to Island Eastern Corridor section between North Point Interchange and Sai Wan Ho (2003)
9. T7 roadwork (Ma On Shan Bypass, 2005)
10. Deep Bay Link and Shenzhen Western Corridor (2007)
11. Widening of Castle Peak Road from Tsuen Wan to Siu Lam (2007)
12. Route 8, Stonecutter to Shatin (2008)

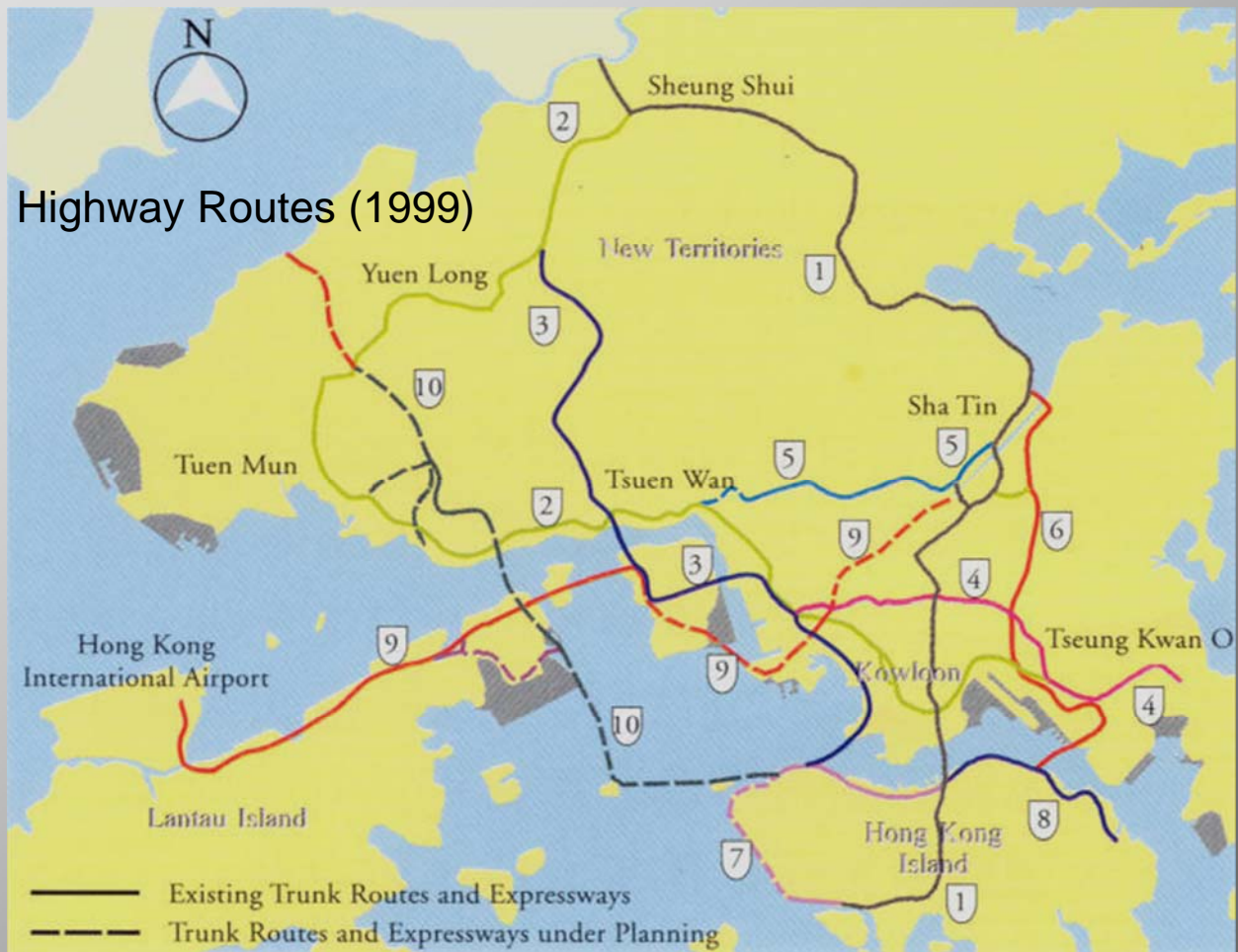
Geographical map
of Hong Kong



Major Highway Systems (Highway Strategic Network)



Highway Routes (1999)



Highway Routes (2003)

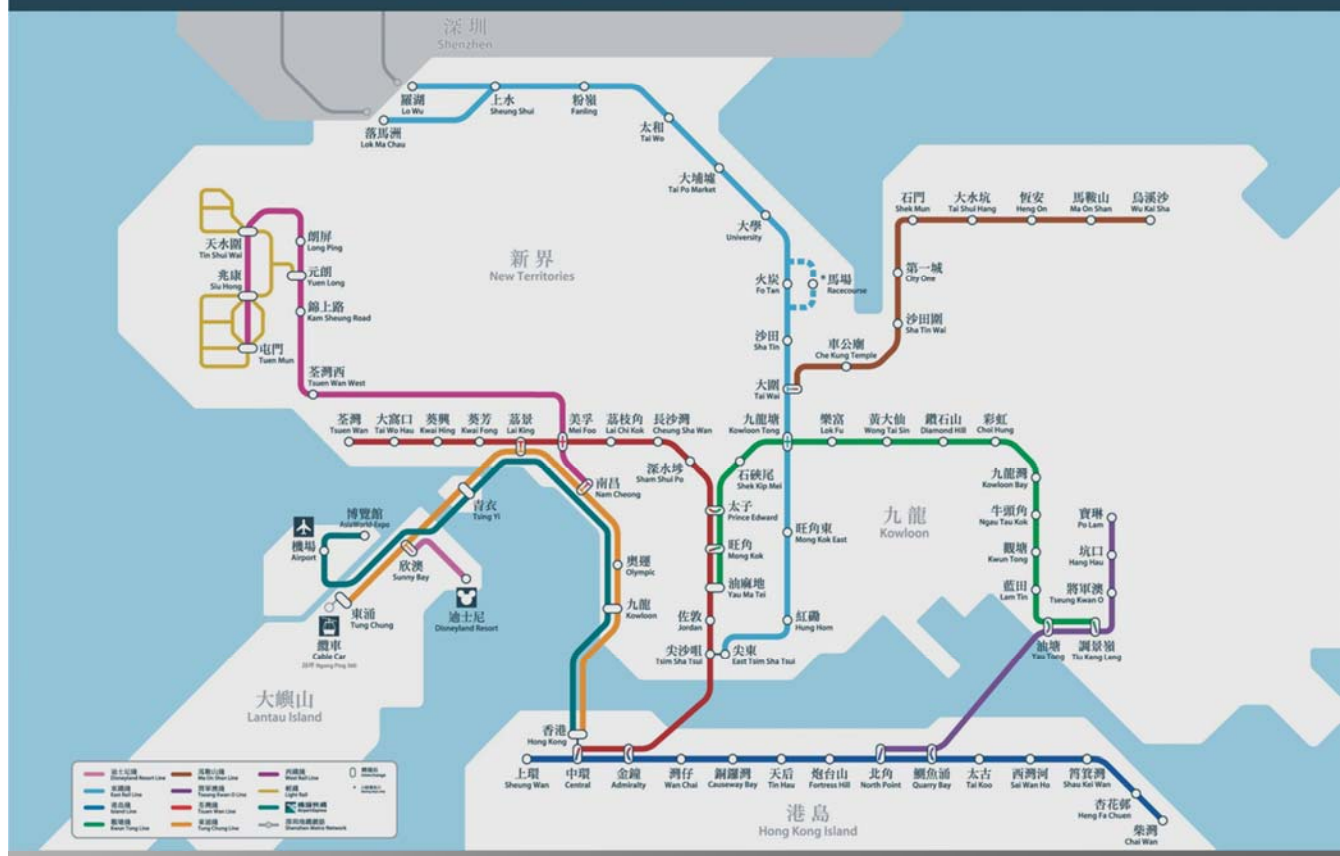


Major Recent Railway Projects

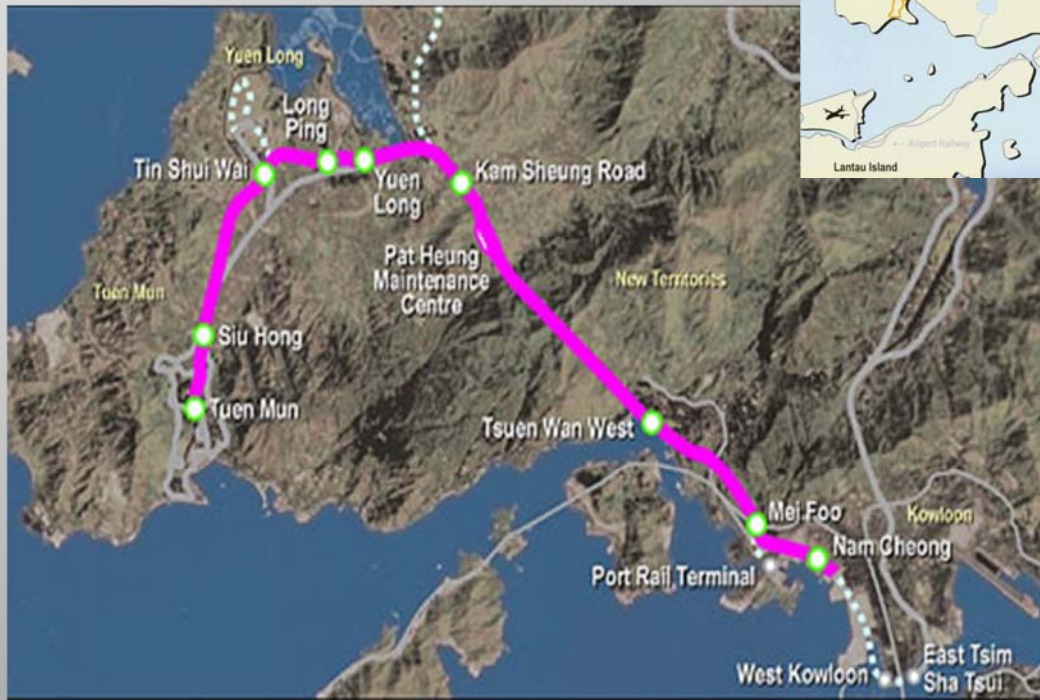
1. MTR Quarry Bay Congestion Relief project (1997 – 2001)
2. MTR Tseung Kwan O Extension (1998 – 2002)
3. KCR West Rail (1998 – 2003)
4. KCR East Rail Extension – Ma On Shan line (1999 – 2004)
5. MTR Disney Line (2001 – 2003)
6. KCR East Rail Extension – Tsim Sha Tsui Extension (2001 – 2004)
7. Kowloon Southern Link (2002 – 2004) – linking East Rail and West Rail at South between TST Station & Nam Chong Station (West Rail)
8. KCR Lok Ma Chau Spur Line (2002 – 2006)
9. West Island and South Island Lines (2009 – 2015)

港鐵路綫圖 MTR system map

www.mtr.com.hk

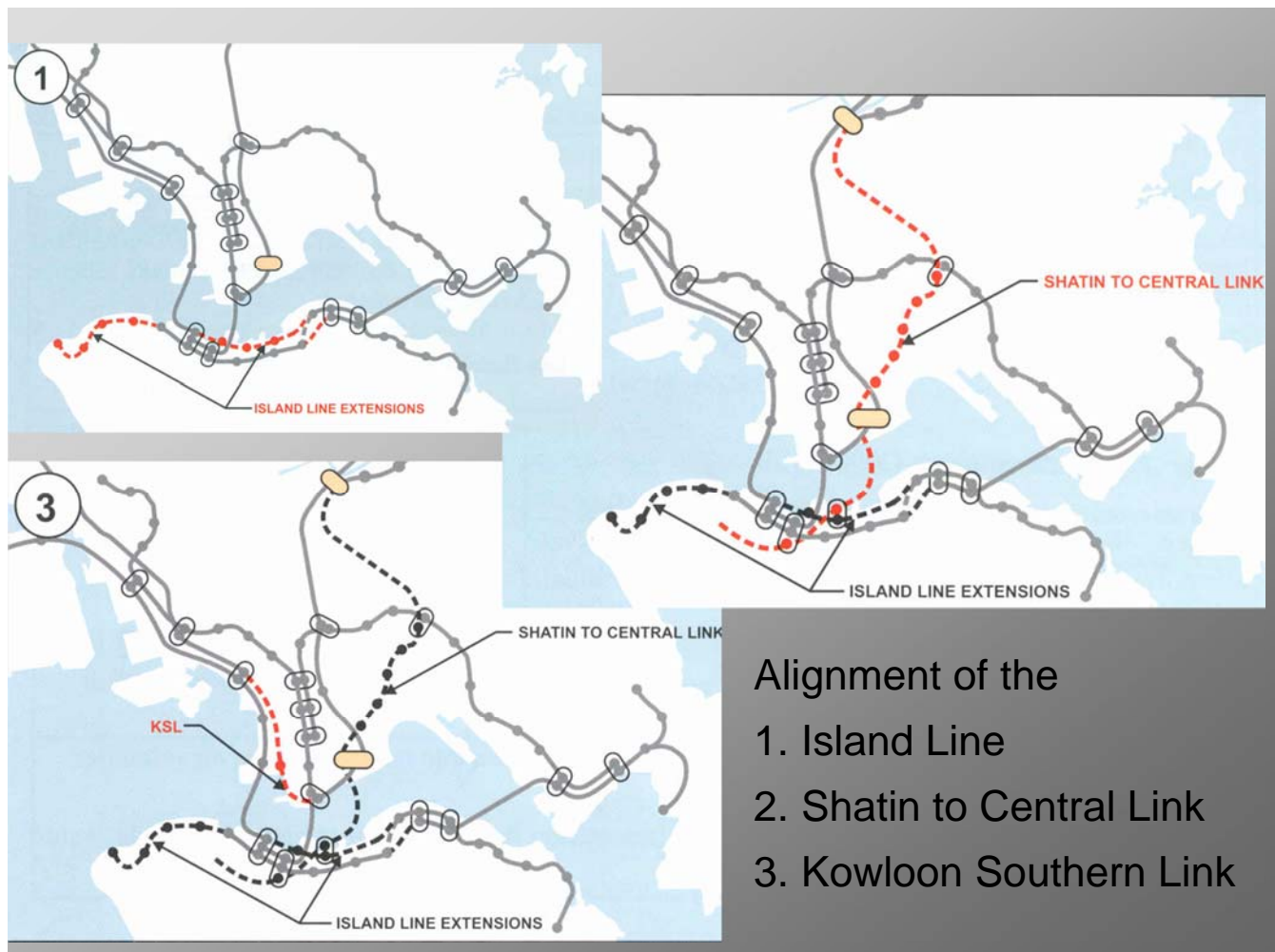


Alignment and Stations of KRC West Rail



Railway Networks according to the Railway Development Strategy 2000 (supplemented by major infrastructure developments under CE 2007 Policy Address)

1. Shatin to Central Link – linking Tai Wai Diamond Hill, Kowloon City, Hung Hom, Wanchai to Central
2. Northern Link – linking the East Rail and West Rail of KCR at the north between Sheung Shui to Pat Sheung
3. Regional Express Link – provide a non-stop railway link between the city and the border at Lo Wu
4. Island Line Extension – an extension at the north shore of the existing Island Line to relief the existing line traffic



Alignment of the Northern Link and Regional Express Line



Infrastructure Projects of other natures

1. HK Convention & Exhibition Centre (1994 – 1997, 2006-2009 Phase III extension)
2. Large-scale sewage works (e.g. Strategic Sewage Disposal Scheme (SSDS)/Harbour Area Treatment Scheme (HATS), 1998 – 2003)
3. Water Supply project (e.g. construction of a 13km aquaduct from Lai Chi Kok to Tai Po for the laying of a series of water mains (1997 – 2000))
4. Storm water and flood control
5. Container Terminal – CT No. 5 to 8 (1994 – 1997)
6. Container Terminal – CT No. 9 (2000 – 2004)
7. Disney Theme Park (2000 – 2006)

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 and SSDS/HATS projects
5. Water Supplies Department – large-scale water supply/distribution works (e.g. aquaduct)

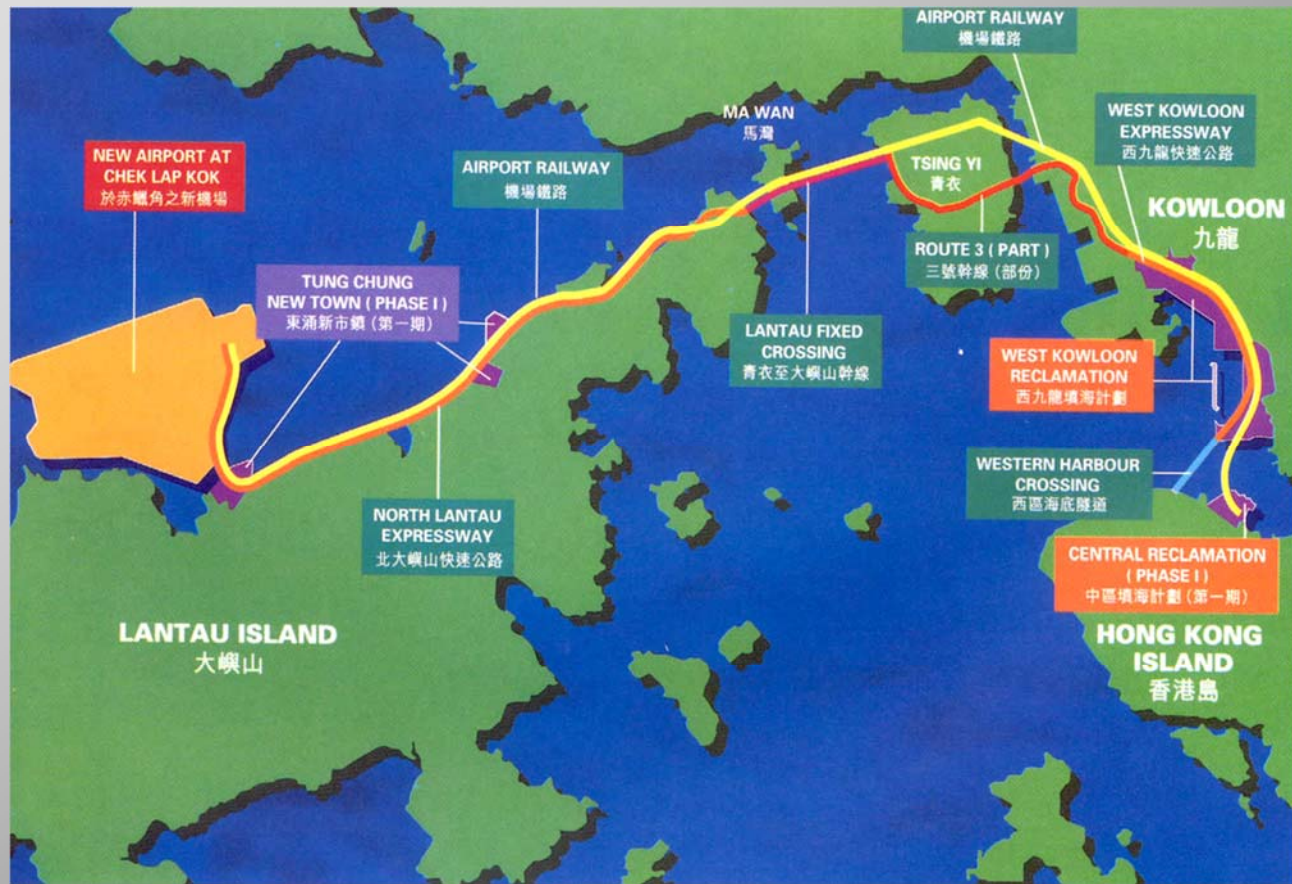
Procuring Agents for Infrastructure Projects

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
9. Other Franchised Organizations (in BOT projects), for example:
 - Tate's Cairn Tunnel
 - Eastern Harbour Crossing
 - Western Harbour Crossing
 - Tai Lam Tunnel

Airport Core Projects include:

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
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Location of Airport Core Projects



New Airport at Chek Lap Kok

Formation of the
Airport Platform
from the original
Chek Lap Kok Island



Construction of the
Air Bridge



Finishing up the
Terminal Interior



The new Airport
close to its
completion





Other facilities in the New Airport



Ground
Transportation Centre





Post Office
Air Mail Centre

Other facilities owned
by the Government



Air Cargo Facilities –
Asian Air Terminal (left)
and Super-Terminal No. 1



HKAEO Aircraft
Maintenance Depot

Tung Chung New Town

Tung Chung taking
shape as in 1997





North Lantau Expressway



Original Coastline of
North Lantau
(section between
Yam O and Tai Ho)

North Lantau
Expressway – formation
of the Yam O Section



Slip Road to
Penny Bay (Disney
Land) at Yam O



Tai Ho Section and the Depot Facilities of Tung Chung Line





Toll Plaza of the
Expressway at
Kap Shui Mun
entrance





Lantau Fixed Crossing



The 1377m span
Tsing Ma Bridge



The Tsing Ma Bridge

Ma Wan side

Tsing Yi side



Cable anchor

Main span

Side span and approach bridge

Water Channel between Tsing Yi and Ma Wan as in 1995



The approach
concourse on the
Tsing Yi side



Approach section leading
to the main span



The approach section
on the Ma Wan side



Forming the
suspension cable



Suspension cable
supported onto the tower
head by the saddle



Hoisting and erecting the
modulated bridge deck
onto the suspension cable

Close up of the lifting gantry that mounted onto the main cable for the lifting and temporary positioning of the prefabricated deck



Exterior and interior view inside the bridge deck



The Ma Wan Viaduct – the linking section between the Tsing Ma and Kap Shui Mun Bridge



Kap Shui Mun Bridge – a 430m cable-stayed bridge





Forming the approach section of the KSM Bridge on the Lantau side

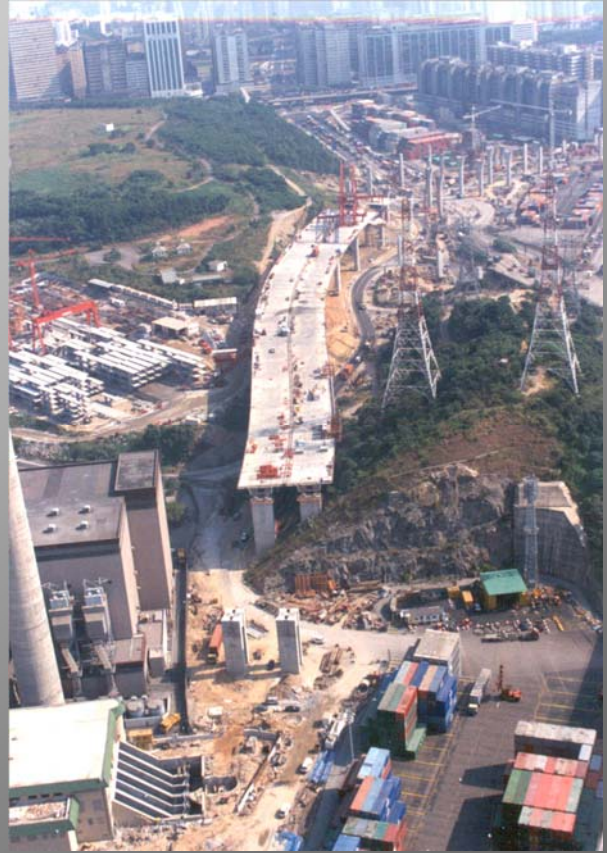


Route 3 – Kwai Tsing Section

Route 3, Tsing
Kwai Section at
Kwai Chung



Approach section of Route 3 heading to the Rambler Channel



This section of Route 3 is mainly composing of 4-lane 2-way elevated roadway, averaged 35m span and 15m above ground

Forming the deck of elevated bridge using precast beam by launching machine (section along Kwai Chung & Kwai Tai Road)



West Kowloon Reclamation

West Kowloon at Yaumatei/Shamshuipo at the early stage of reclamation



Gradual progress
of Reclamation
at Yaumatei



Reclamation at
Cheung Sha Wan –
relocation of the
Fish Markets



Government docks and private-owned shipyards being relocated during the reclamation process



Commencement of roadwork and other infrastructure facilities after reclamation completed in 1996



South-most tip of West Kowloon Reclamation – connection to the harbour crossing tunnels



Reclamation at
Stonecutter Island
to form land for
Container Terminal
No. 5 to 8



Container Terminal No.
5 to 8 put into operation
in early 1997



West Kowloon in 2002





West Kowloon in 2008

West Kowloon in 2008



West Kowloon Expressway

West Kowloon Expressway comprising:

1. North Section – Elevated, 2.7 km
2. South Section – On-grade, 1.5 km



West Kowloon Expressway – construction of Mei Foo Interchange



West Kowloon
Expressway at
Tai Kok Tsui near
Olympus Station



Western Harbour Crossing



Casting yard for the forming
of the submerge tunnel
tubes at Shek O Quarry

Delivery of the Submerge-
tube by floating-out from the
casting yard (dry dock)



Transport the submerge-tube
by barges and place them onto
pre-arranged position

Connecting the submerge-
tube to the tunnel approach



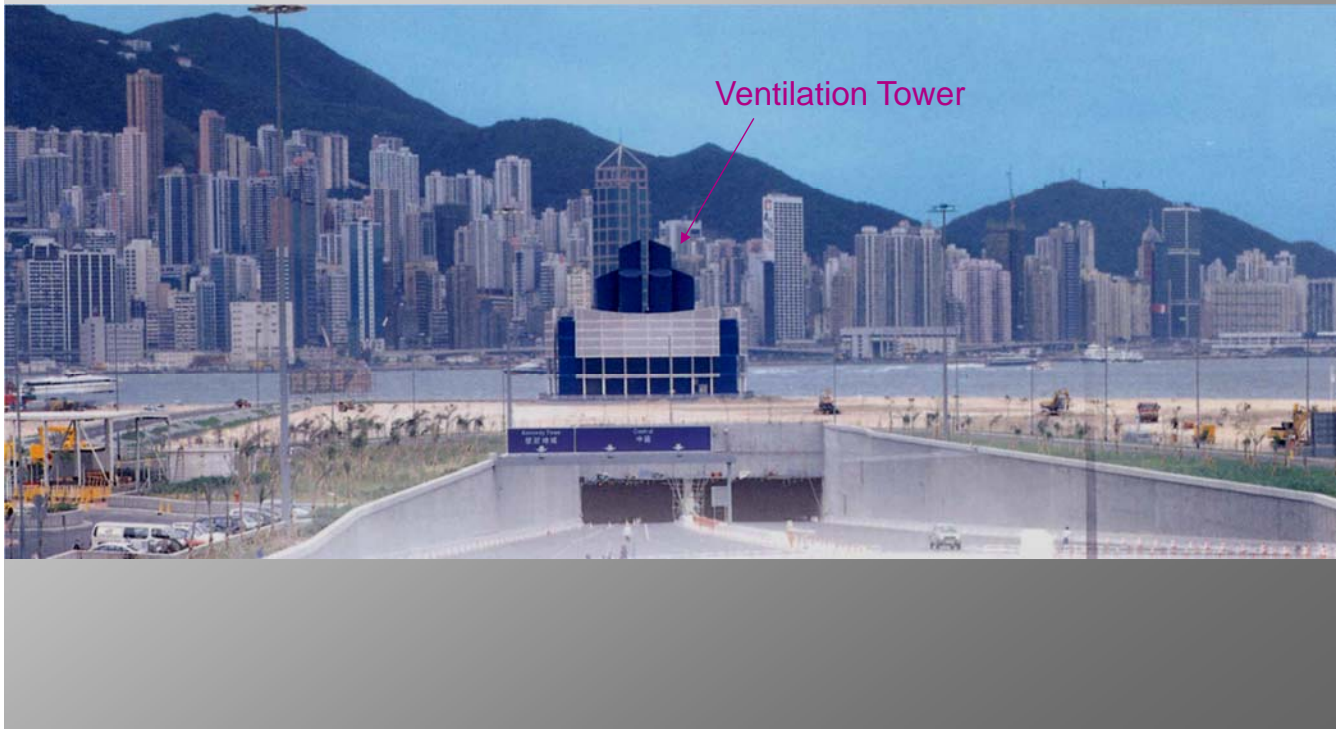
The tunnel approach
and connection
arrangement at Sai
Ying Poon side



Associated roadwork forming the entrance concourse to the Western Harbour Crossing at Sai Ying Poon side



Western Harbour Crossing at the West Kowloon entrance



Central Reclamation

Early stage of the
reclamation work
in 1994



Construction of new ferry piers to replace the old that were still servicing central to Jordon Road and outlying islands

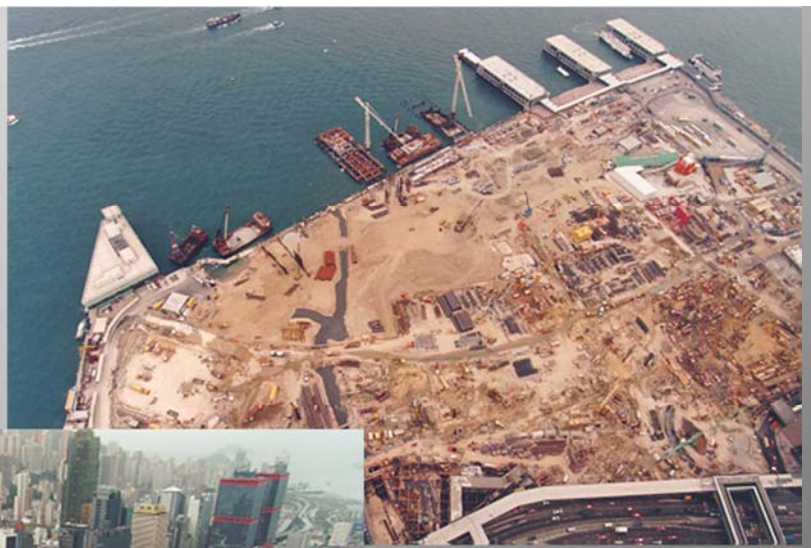
Servicing ferry piers



Reclamation carried out in a looped manner to allow servicing facilities to be replaced at the latest stage



Gradual completion of
the reclamation for
handing over for
commencement of
other facilities



Viewing the area in
2001 with the IFC 2
under construction



Central Reclamation
(Phase I) as seen in 2007



Central Reclamation
(Phase I) as seen in 2007

Airport Railway

The 32km Airport Railway and Tung Chung Line owned by MTR



Hong Kong Station
of the
Airport Railway



Cut-and-Cover
Tunnel for the Airport
Railway in the newly
Reclaimed Land in
Central



Aerial view of the Central Reclamation seeing the
Railway Alignment going into the Harbour Crossing Tunnel



Construction of the
Kowloon Station and
the cut-and-cover
tunnel of the Airport
Railway at its early
stage in 1995





Kowloon Station as seen in 1998, the station provide vast land resources to fund the Airport Railway projects as well as for the future development of the West Kowloon





Airport Railway
crossing the Rambler
Channel heading to
the Tsing Yi Station



Property development to finance the Airport Railway

– the International Financial Centre projects



Property development to finance the Airport Railway

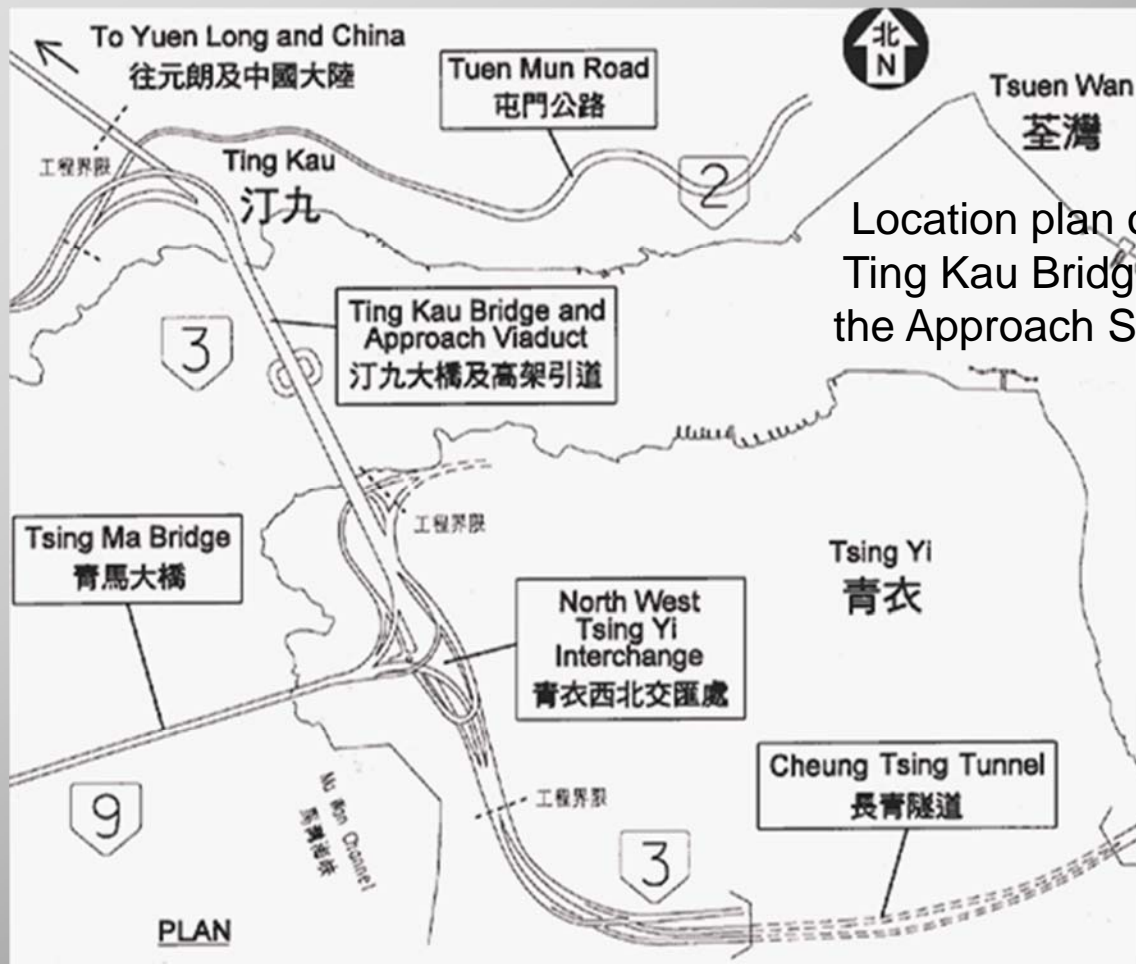
– development around Kowloon and Olympus Station



Detail understand of some major
Infrastructure Developments –
Highway projects

Route 3, Country Park Section
Ting Kau Bridge

Elevation of the Ting Kau Bridge and the Approach Section on Ting Kau side



Location plan of the Ting Kau Bridge and the Approach Section



Ting Kau Bridge is a cable-stay bridge in 3 spans

Overall view of the Ting Kau Bridge at her opening in 1998



Construction of the bridge towers



Tsing Yi Tower

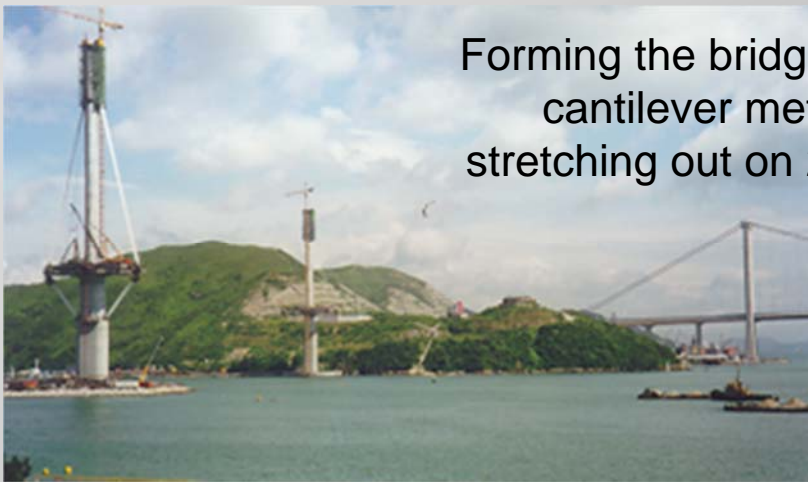


Channel Tower



Ting Kau Tower

Forming of the bridge deck deck placing of



Forming the bridge deck using balanced cantilever method with the span stretching out on 2 sides from the tower





Final joining of the
bridge deck

Bridge approach on Ting Kau side





The bridge approach on Ting Kau side



Tuen Mun Highway

Aerial view of the approach and the slip road heading TK Bridge



Construction of the approach viaduct using balanced cantilever method (traveling form)



Section between Ting
Kau and Tai Lam
Tunnel – 600m roadway
cutting through a 70m-
high rocky hill

----- Original rock
profile



Route 3, Country Park Section Works at Kam Tin area

Forming the interchange using precast launching system



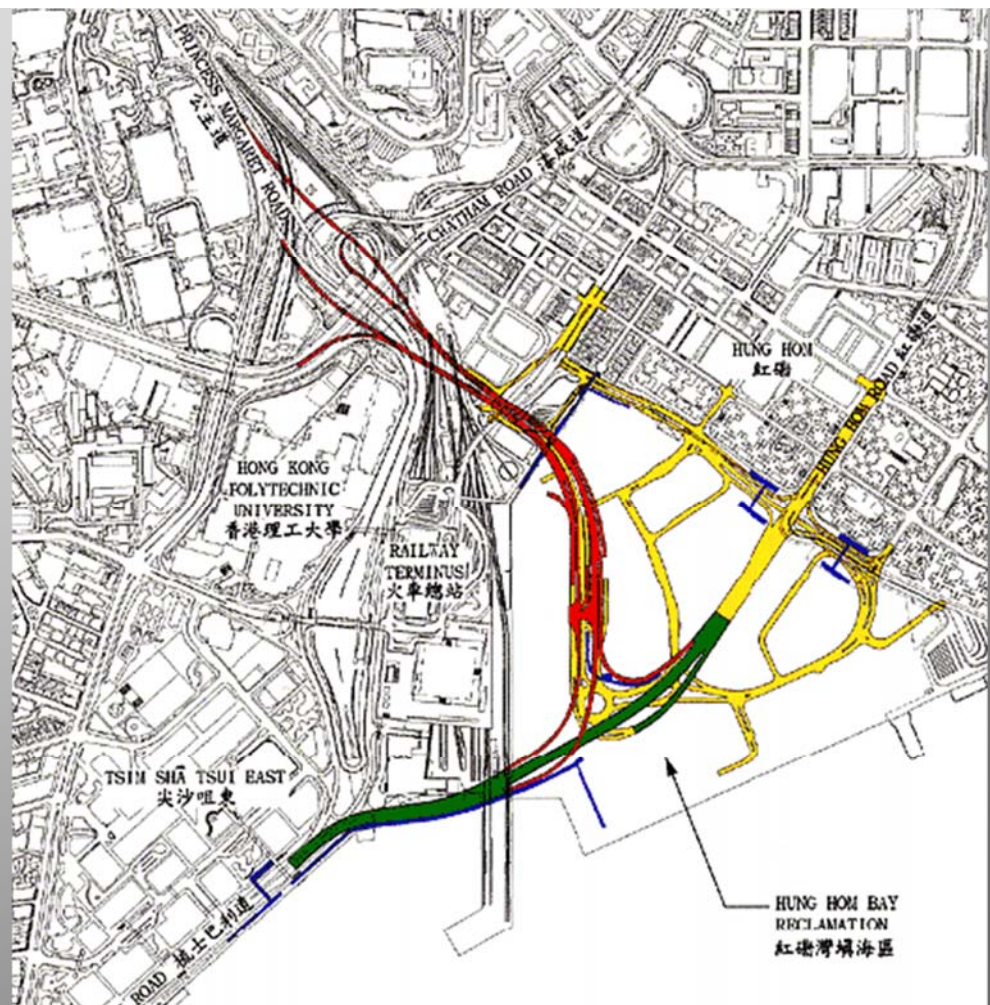
Route 3 at Au Tau Interchange





Hung Hom By-pass

Layout of the
Hung Hom By-
pass routing



Erection of the
elevated roadway
using precast
box-girder by a
launching gantry



Viaduct near the
Mail Centre



Work over very busy
servicing roadway at junction
of Hong Chong Road and
Chatham Road

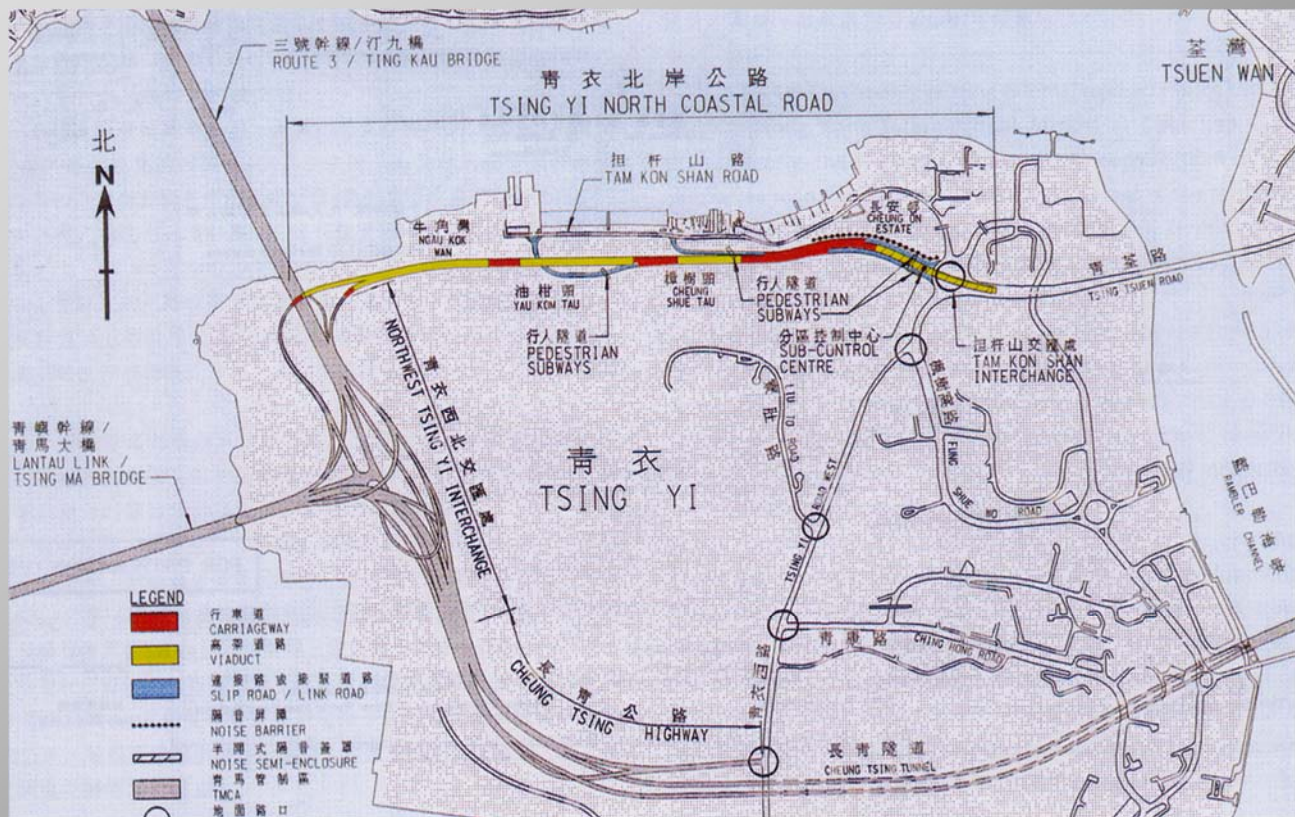


Work over very busy servicing roadway at junction of Hong Chong Road and Chatham Road



Tsing Yi North Coastal Road

Location map of the Tsing Yi North Coastal Road



Overview of the construction at the early stage in 2000



The road system at its completion in early 2002





Detail understand of some major
Infrastructure Developments –
Railway Projects

Railway Lines in Railway Development Study 2000

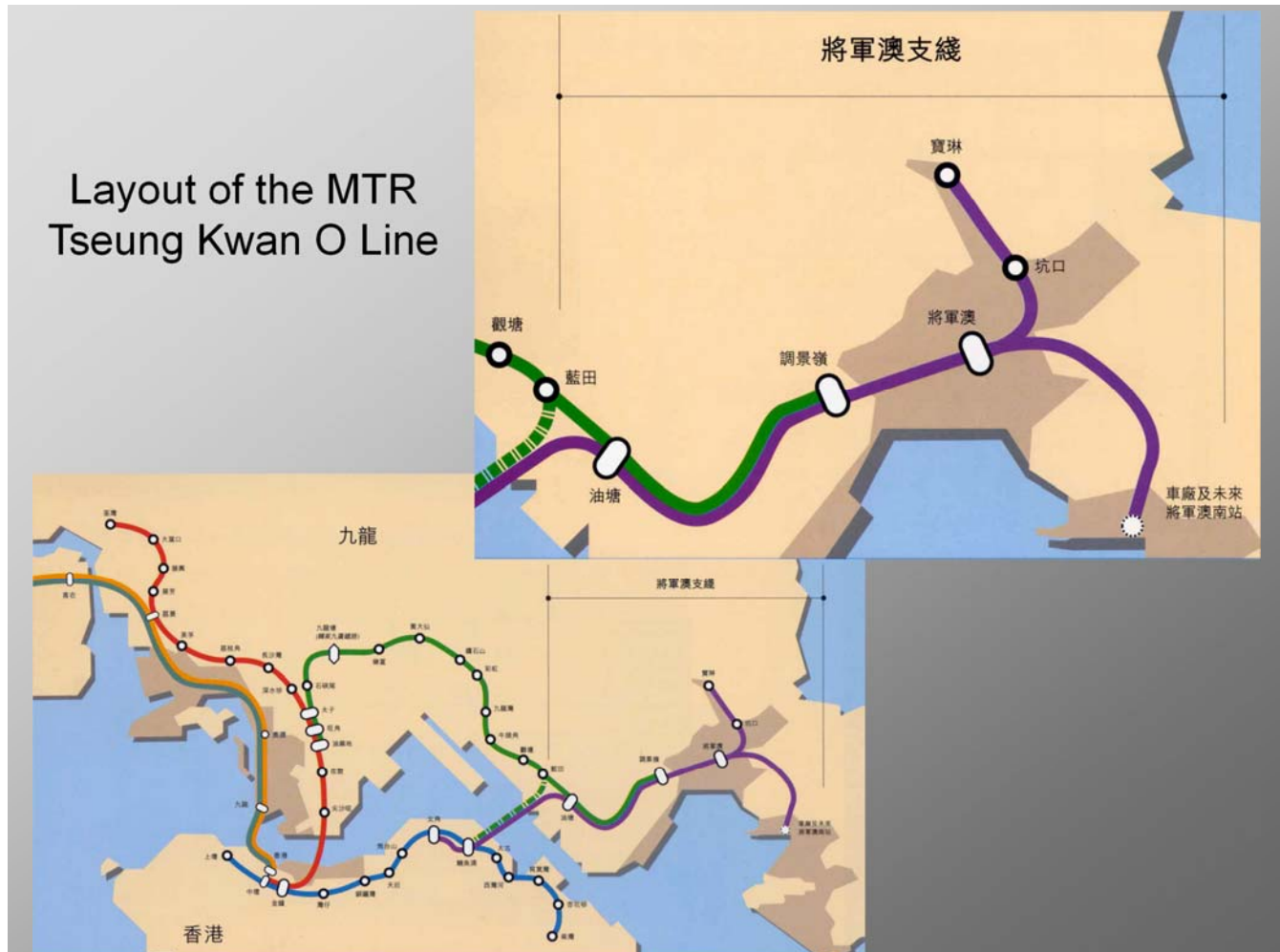


Major Railway Lines/Projects

1. MTR Tuen Wan and Kwun Tong Line (1975 - 1982)
2. MTR Island Line (1978 – 1985/9)
3. MTR Tung Chung Line and Airport Express Line (1994-98)
4. MTR Quarry Bay Congestion Relief project (1997 - 2001)
5. MTR Tseung Kwan O Extension (1998 - 2002)
6. KCR West Rail (1998 - 2003)
7. KCR East Rail Extension – Ma On Shan line (1999 - 2004)
8. KCR East Rail Extension – Tsim Sha Tsui Ext. (2001 - 2004)
9. KCR Lok Ma Chau Spur Line (2002 - 2006)
10. KCR Kowloon Southern Link (2003 - 2009)
11. KCR Shatin to Central Link (2007 – 2011....)

MTR Tseung Kwai O Line (TKE)

Layout of the MTR
Tseung Kwan O Line



Tseung Kwai O Line – Formation of the Yau Tong Station

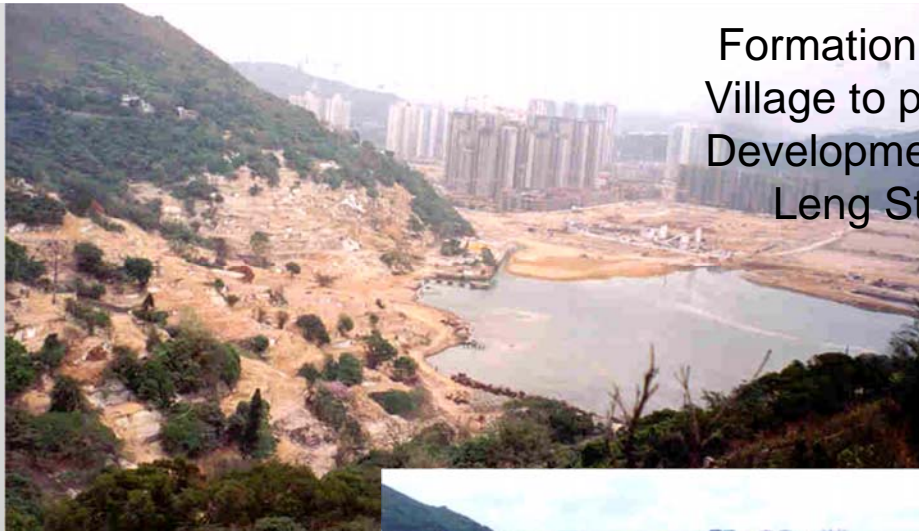
Aerial view showing the overall layout of
the Yau Tong Station and its vicinity



Yau Tong Station
as seen in the
construction stage



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 Kwan O
Station located on
new land formed
by reclamation



Construction of the
Tseung Kwan O Station





Layout of the Hang Hau Station as seen in early 1999



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



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

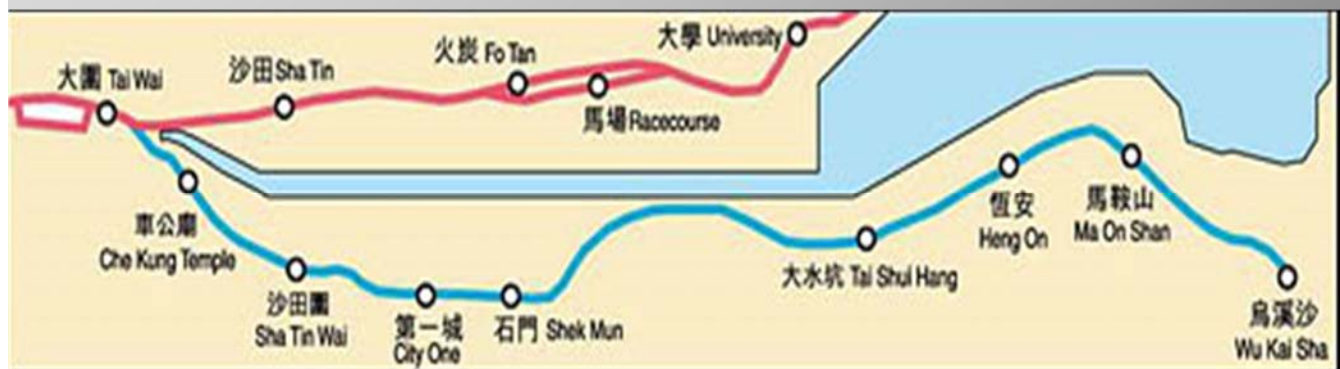


Tunnel work
outside Mail
Centre of
thePost Office



KCR East Rail Extensions – Ma On Shan Line

Alignment of the KCR Ma On Shan Line



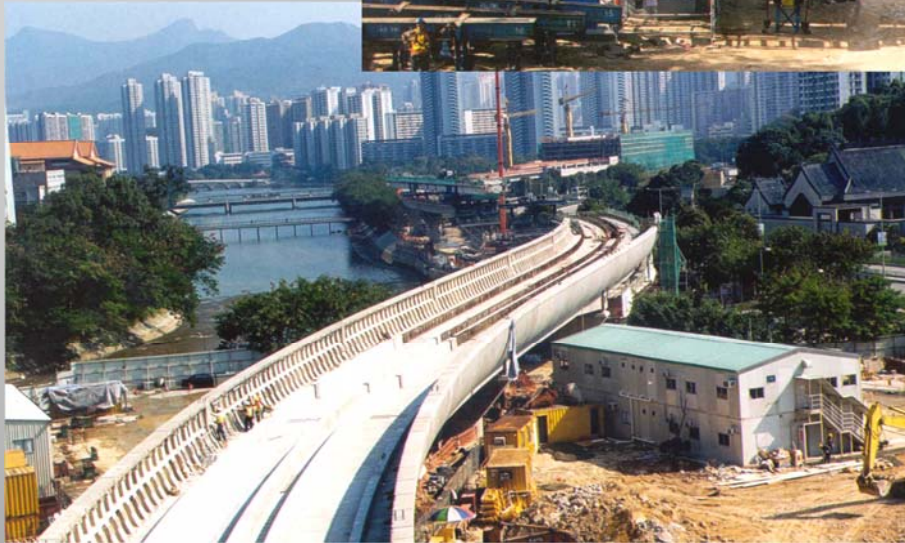
Ma On Shan Line
joining East Rail
at Tai Wai Station



Service Depot of the MOS Line located in Tai Wai



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



Construction of
viaduct at Tai Shui
Hang crossing a
busy highway



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



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



Laying of track

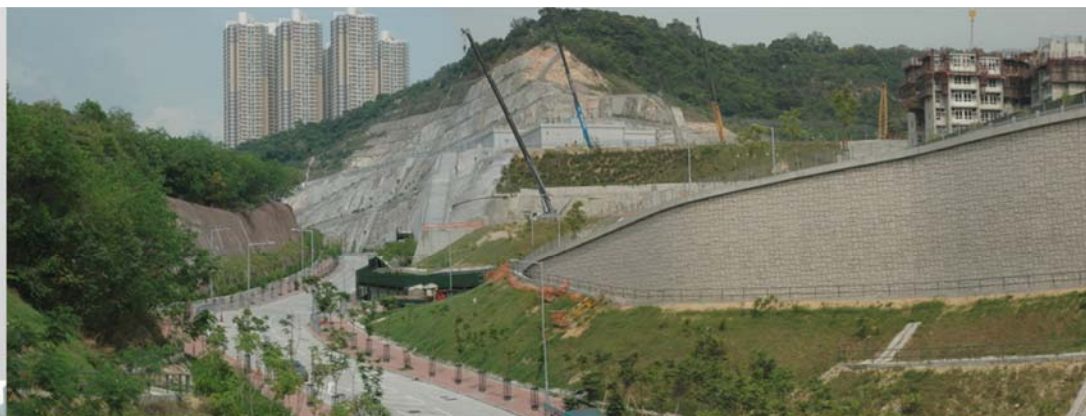


Formation of new land



Choi Wan site formation as seen in 2006







Roadwork to connect
the new land with
existing traffic



Anderson Quarry as viewed from the air above Kwun Tong



Anderson Quarry as viewed from the air above Tseung Kwan O



Anderson Quarry
as viewed from
Victoria Harbour



Anderson Quarry







Other examples of large scale site formation projects in recent years

Important Internet Reference

1. Homepage of Raymond Wong
<http://personal.cityu.edu.hk/~bswmwong/>
2. Homepage of Highway Department
<http://www.hyd.gov.hk/major/index.htm>
3. Homepage of KCRC
<http://www.kcrc.com/chi/corporate/project/index.asp>
4. Homepage of Civil Engg. Department
<http://www.info.gov.hk/ced/eng/index.htm>
5. Homepage of Territory Development Dept.
<http://www.info.gov.hk/tdd/>