



Advancing Performance of Complex Mega Infrastructure Projects

For CICID 10th Anniversary Conference

TC Chew
Projects Director
MTR Corporation

31 May 2013

5 New Rail Projects are progressing well



which will add **56 km** to our network in Hong Kong

3 New Lines and 2 Railway Extensions

WIL

Route Length: 3 km

New Stations: 3

Target Completion: 2014

SIL (E)

Route Length: 7 km

New Stations: 4

Target Completion: 2015

KTE

Route Length: 3 km

New Stations: 2

Target Completion: 2015

XRL

Route Length: 26 km

New Stations: 1

Target Completion: 2015

SCL

Route Length: 11 km + 6km

New Stations: 8 + 2

Target Completion: 2018 / 2020

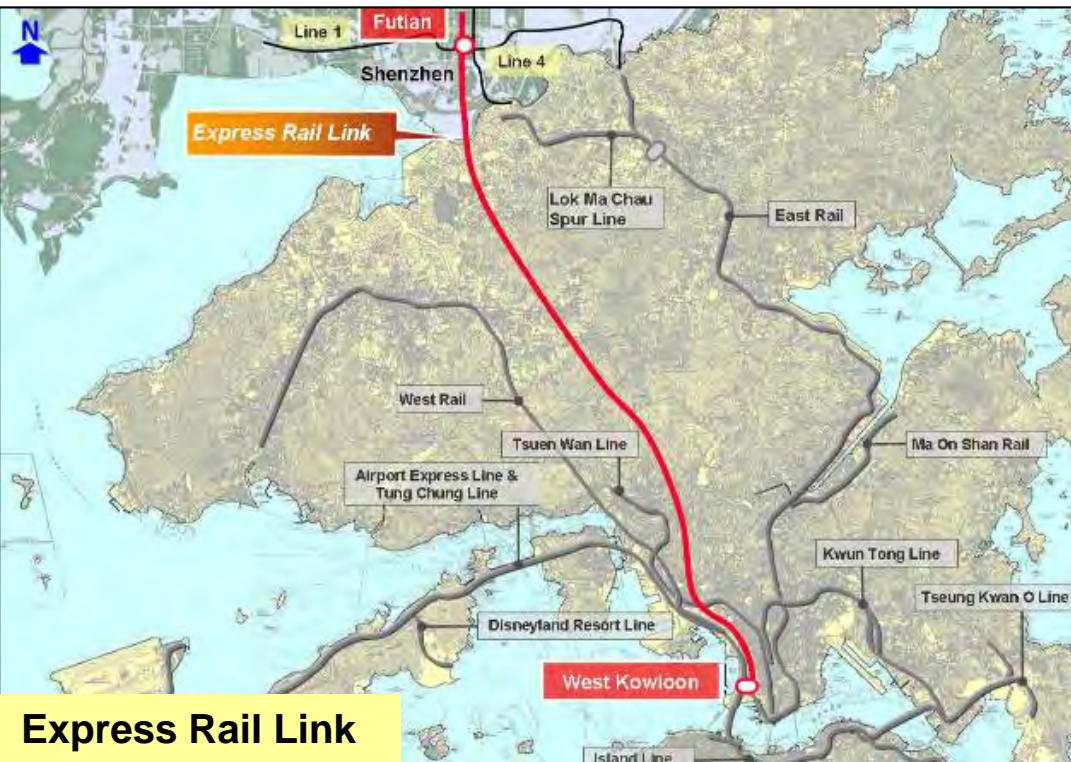
MTR Corporation

Guangzhou-Shenzhen-Hong Kong Express Rail Link



Total Project Cost HK\$ 181.3Bn

Five Complex Mega Projects Ongoing



26km Tunnels

- Pass through heavily urbanized area and rural area
- Blasting ongoing at 6 locations ; 8 TBM running at peak period



11-hectare Underground Terminus

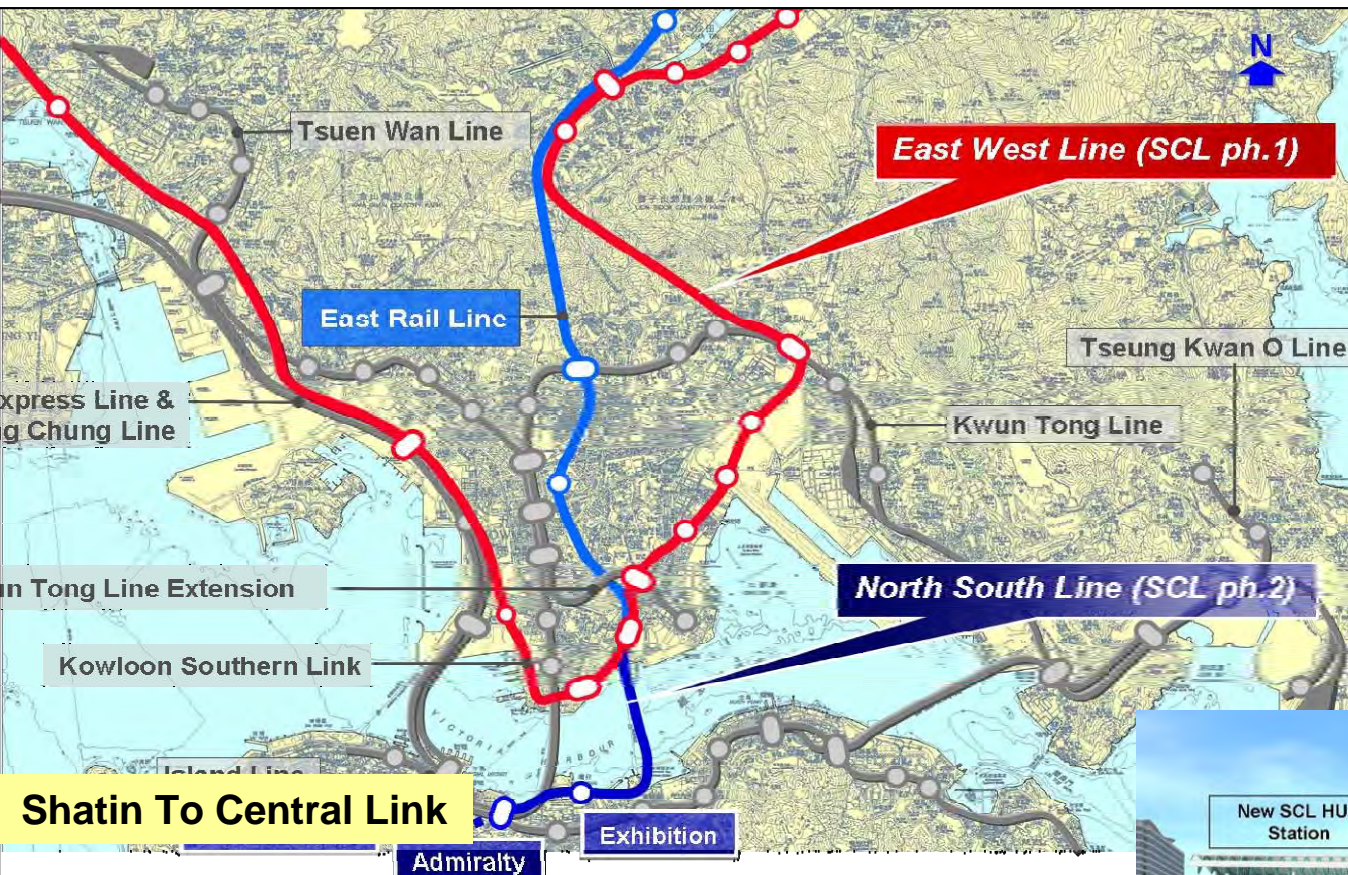
- Equal to 30 average-size MTR stations
- Complex interface among contractors
- Mega roof steel structure



E&M System for High Speed Rail

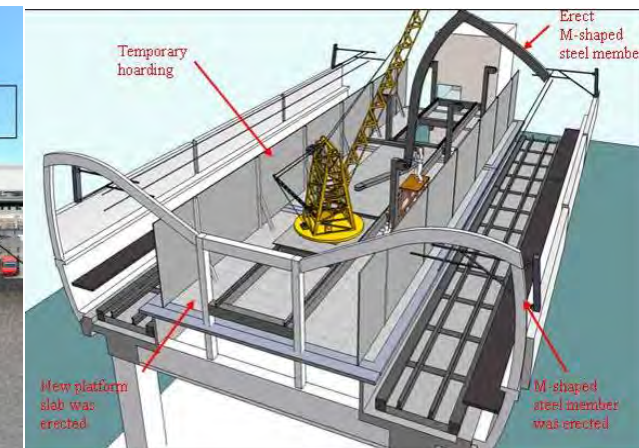
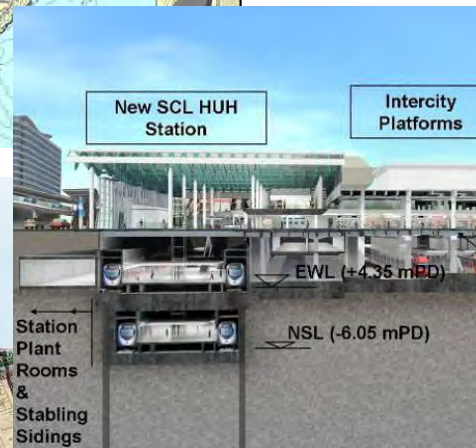
- 1st High Speed Rail in Hong Kong
- Compatibility with Mainland System

Five Complex Mega Projects Ongoing



Systems Migration and Upgrade

- Signalling and Rolling Stock
- APG Installation
- Radio System and Main Control System

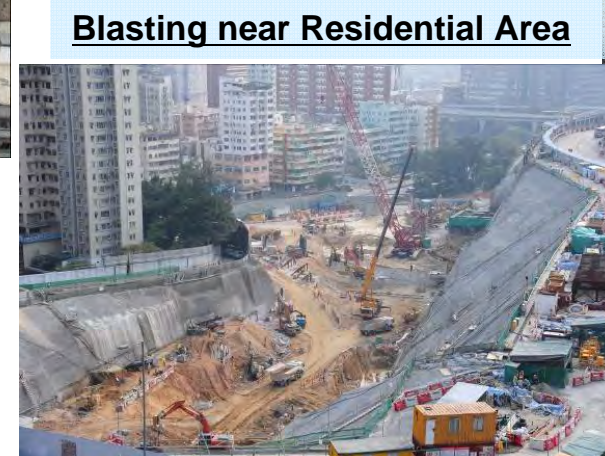
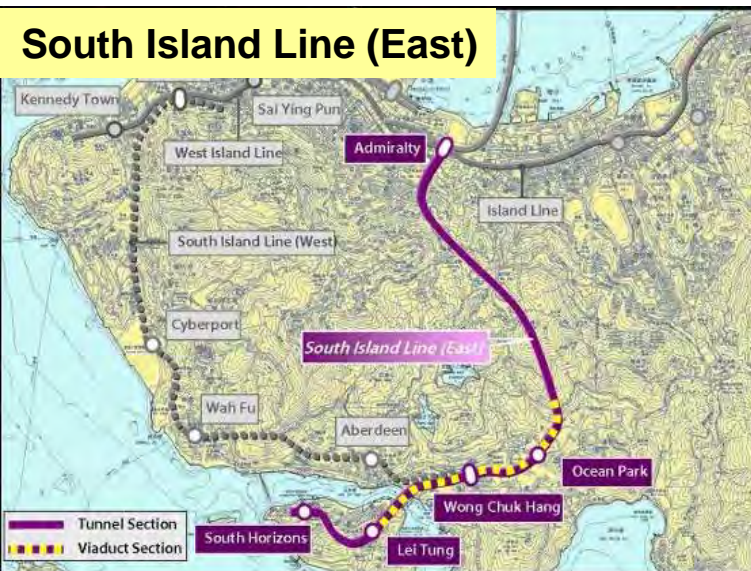


Modification of Existing Stations

Complex Interface with Other Projects

- Kai Tai Development and Wan Chai Development Phase II

Five Complex Mega Projects Ongoing



Construction in Heavily Urbanized Area
 -Limited worksites and access
 -Utilities Diversion and Traffic Diversion

Advancing Performance from Design to Project Implementation

Greening Design and Public Space



University Station New Entrance -
Leadership in Energy and
Environmental Design (LEED)
Silver Certification

Green Roof and Wall



Large open space return to public

Artwork in Station



West Island Line - *“Our Memories of the Western District”*



“MTR New Railway Lines Art in Station 2012” Open Call for Proposal

Fully Automatic Operation in SIL(E), EWL and NSL

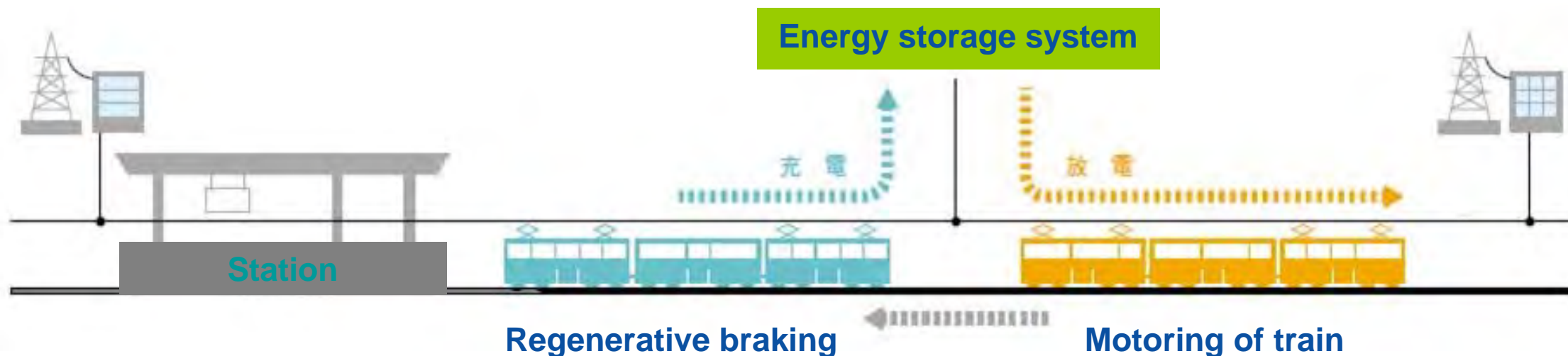
- Improve Flexibility of Train Deployment
- Reduce Human Error
- Speedy Response to Changes in Passenger Flow



- Communication-based train control system (CBTC)
- CCTV and TETRA system - Incident and emergency handling
- Depot design

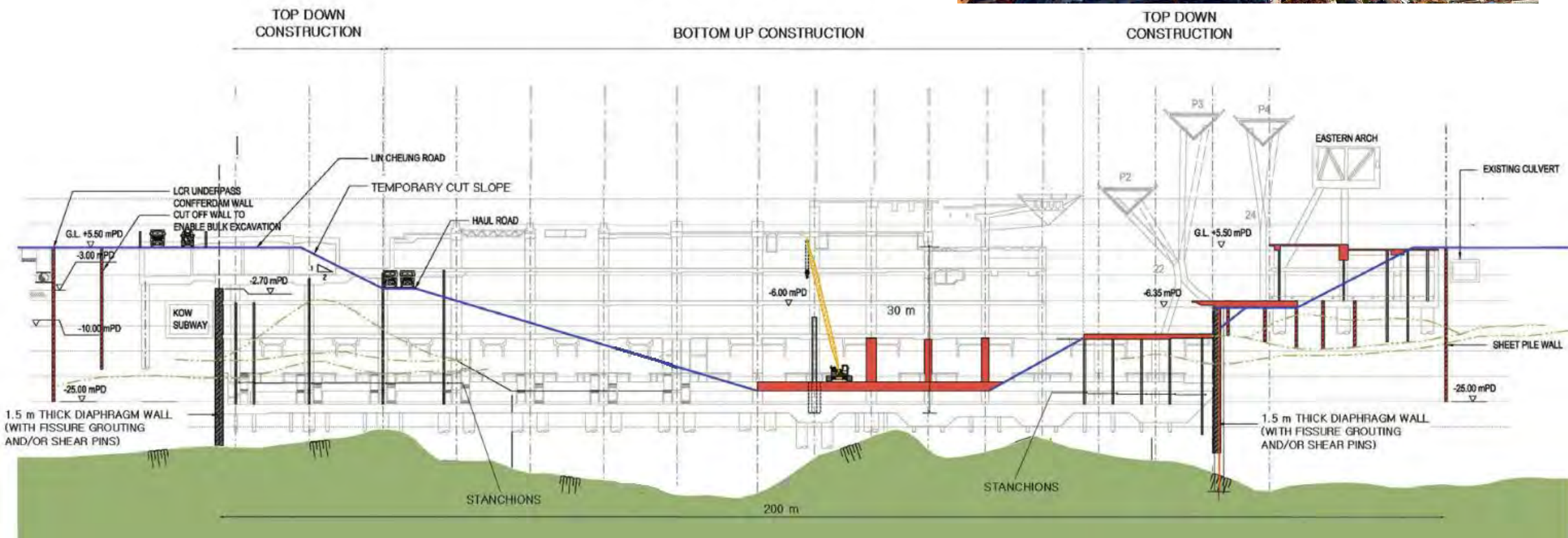
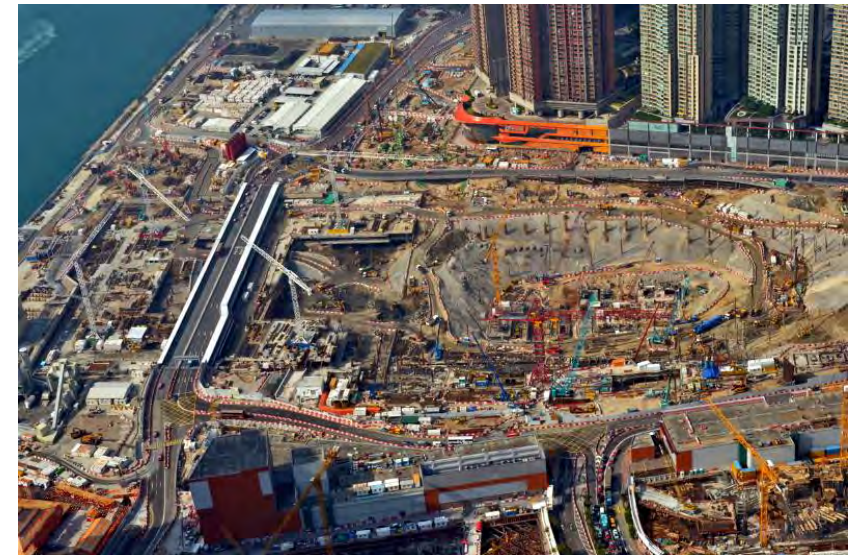
Enhance Energy Efficiency

- Adopt various energy saving initiatives
 - Energy storage system; Natural light and ventilation; reduction of energy loss in power distribution...
- Continuous research on new technologies to enhance energy efficiency



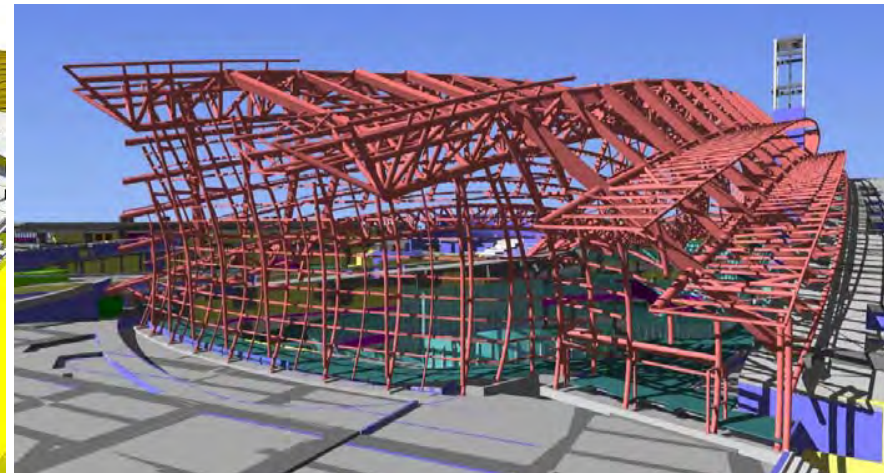
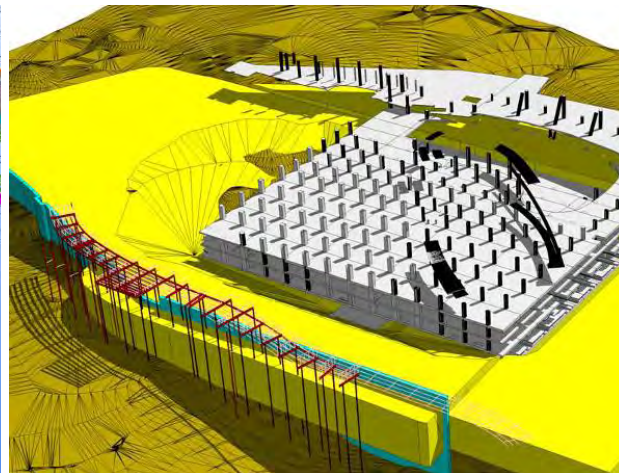
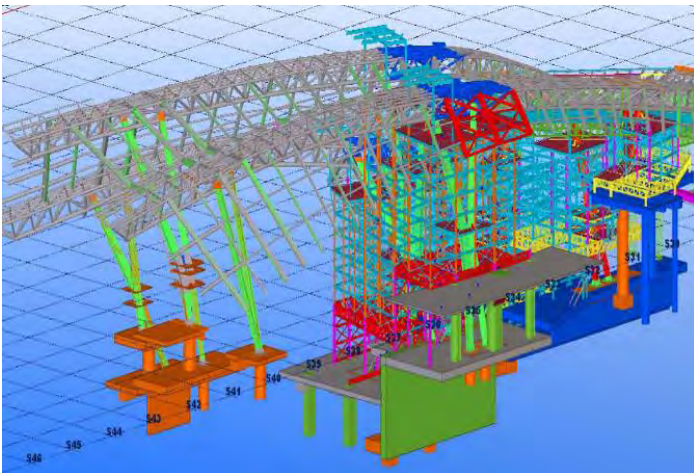
Construction Methods and Planning

- 4 Contractors worked concurrently for the ground engineering works
- Combination of “Bottom-up” and “Top-down” excavation
- On-site concrete batching plant and rebar fabrication factory



Adoption of Building Information Model

- Minimize wastage resulted from errors
- Visualize the construction sequences
- Share of information among all parties
- Handover to operation staff for asset management



Innovations Developed In-house

Encourage Innovations to Enhance Efficiency

- Process large amount of data;
- Savings in manpower and costs
- Small Innovation ;
Big Change to Industry



Automatic Noise Data
Management E-System



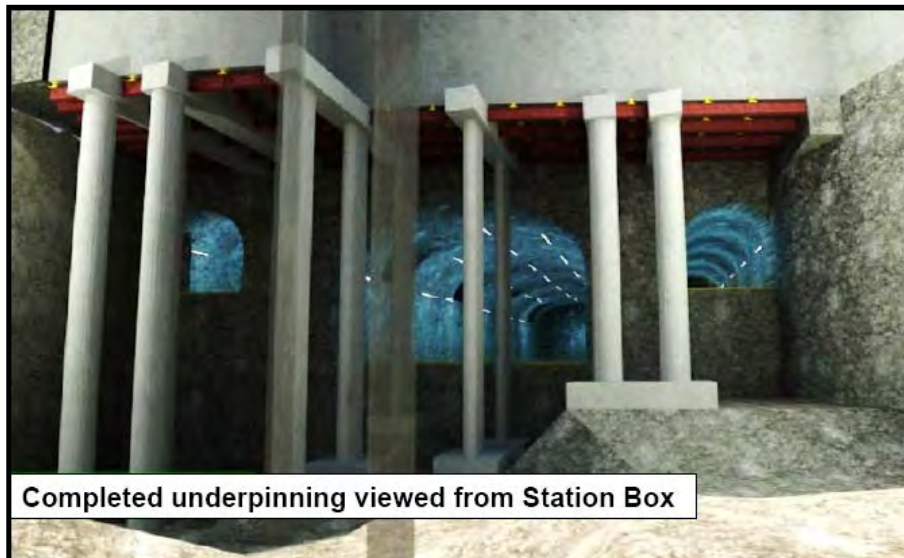
Materials Testing System

MTR Corporation

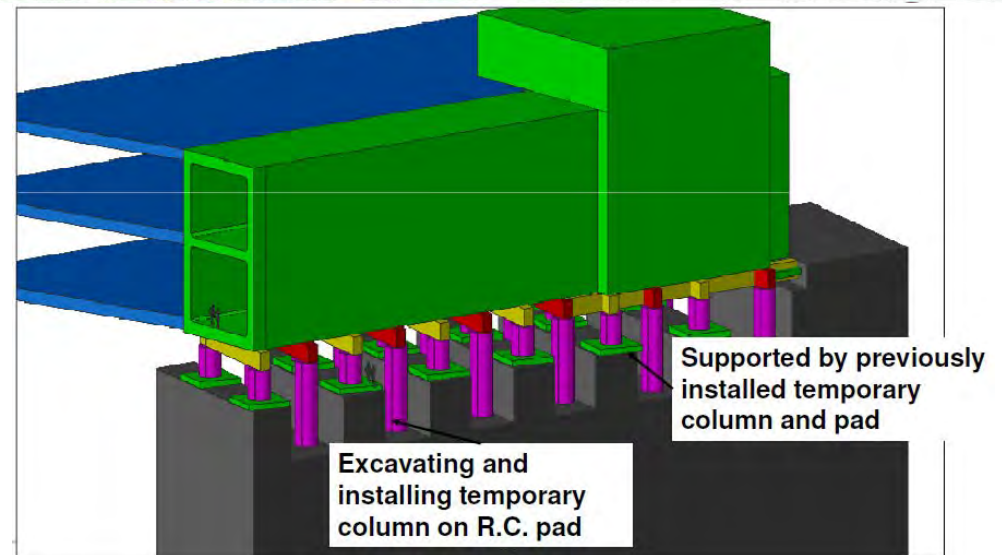
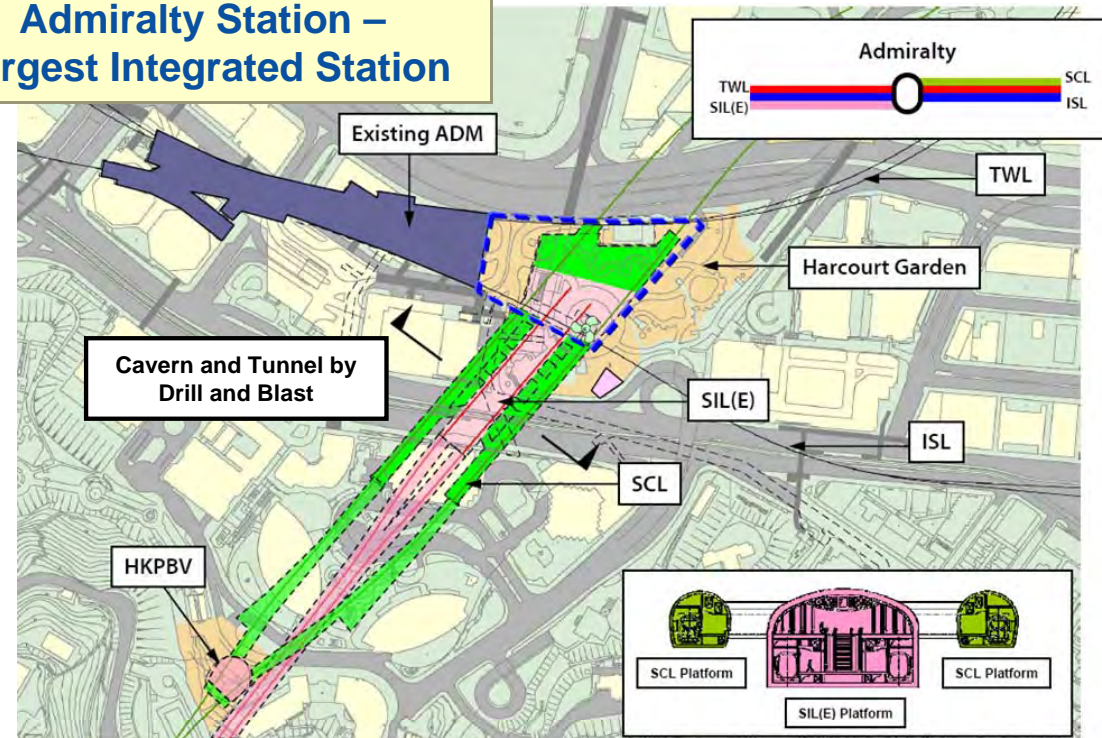
Eliminate Risks and Enhance Constructability

Underpinning - Incremental Approach

- Remove risk of **elastic shortening** and **column slenderness**
- Reduce likely impact from **un-favourable rock joints**
- Provide **safer access** at multiple work areas
- Better control and monitoring of **ground movement** around ISL structure



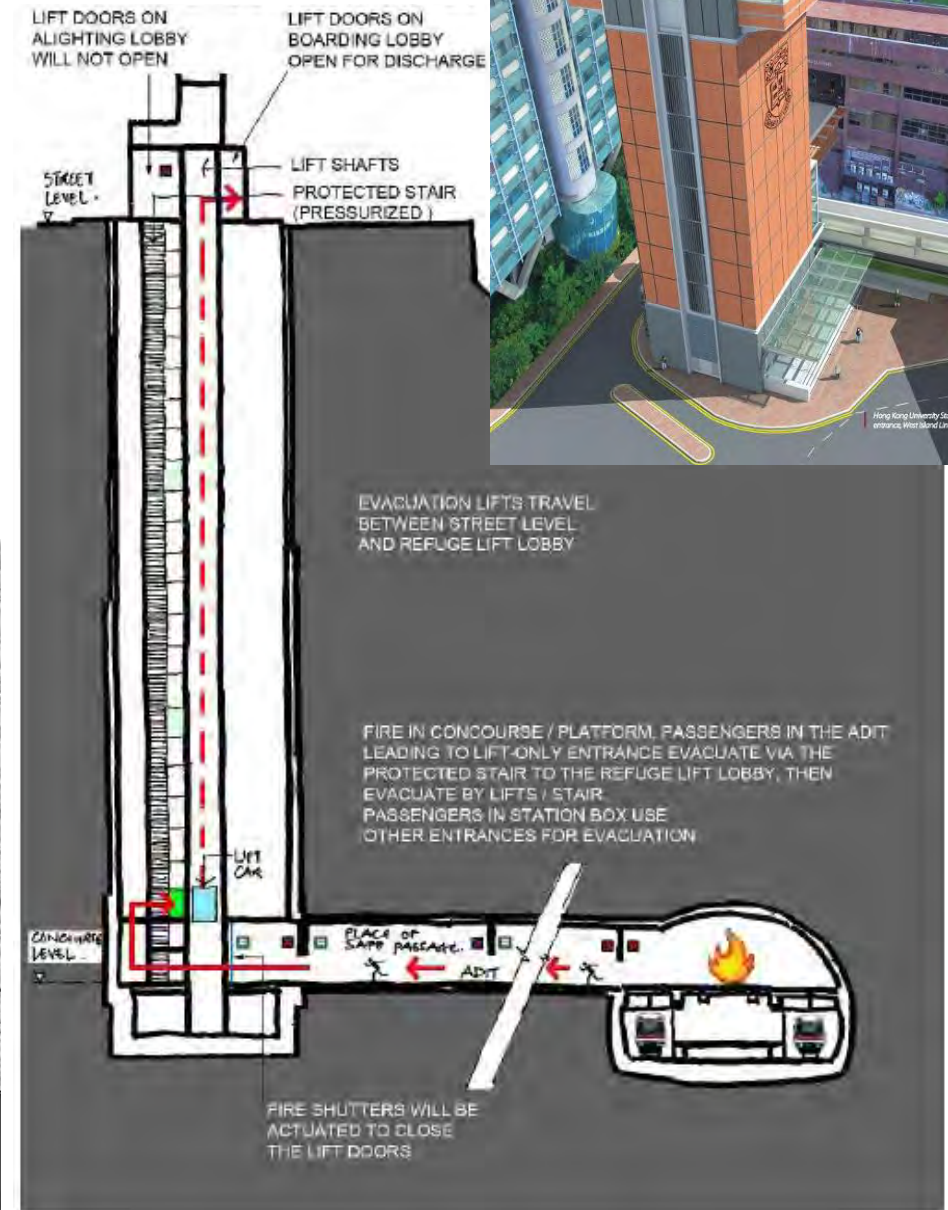
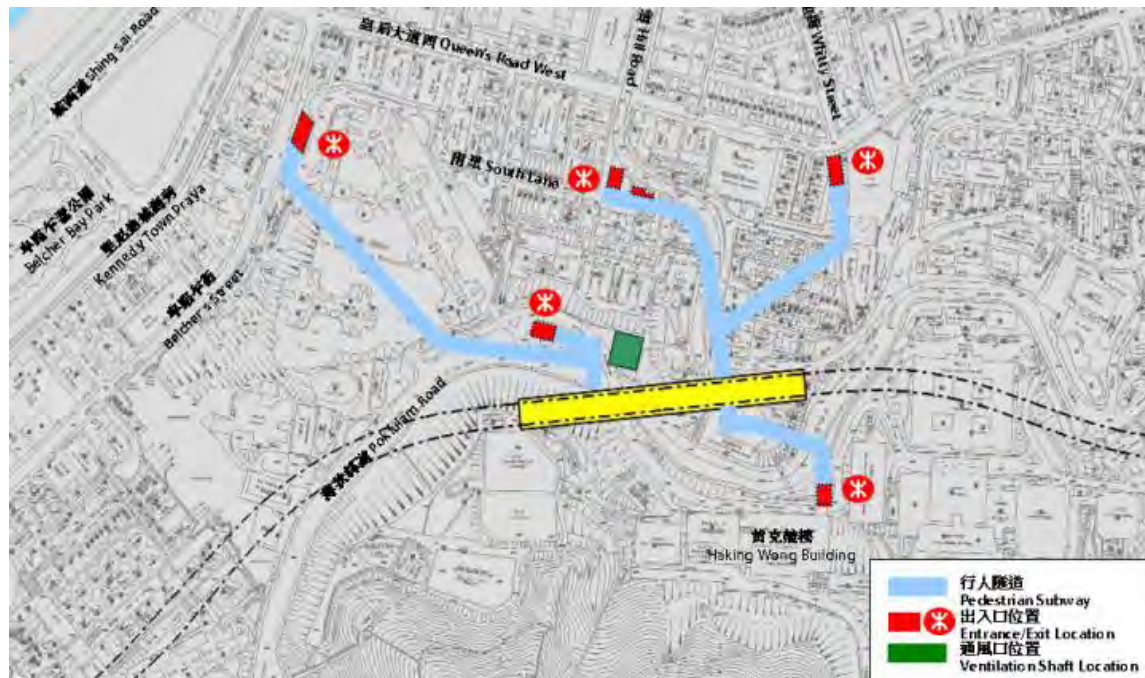
Admiralty Station –
Largest Integrated Station



Innovative Solutions to Overcome Constraints

Introduction of High Capacity Lift

- Overcome the topographic constraints to reach a larger catchment
- Take up less space and consume less energy
- New concept of emergency evacuation



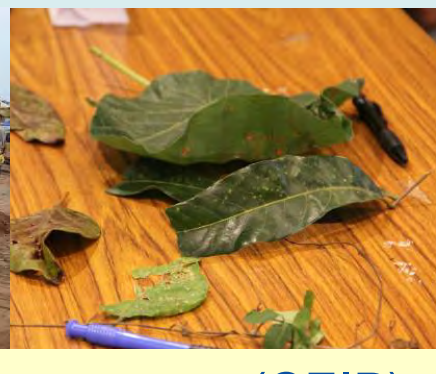
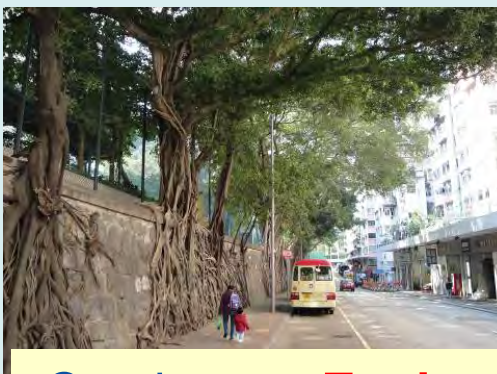
Continuous Improvement in QSE



Quality Improvement Initiatives



Safety Initiatives



Continuous Environmental Improvement Programme (CEIP)

Proactive Stakeholder Engagement



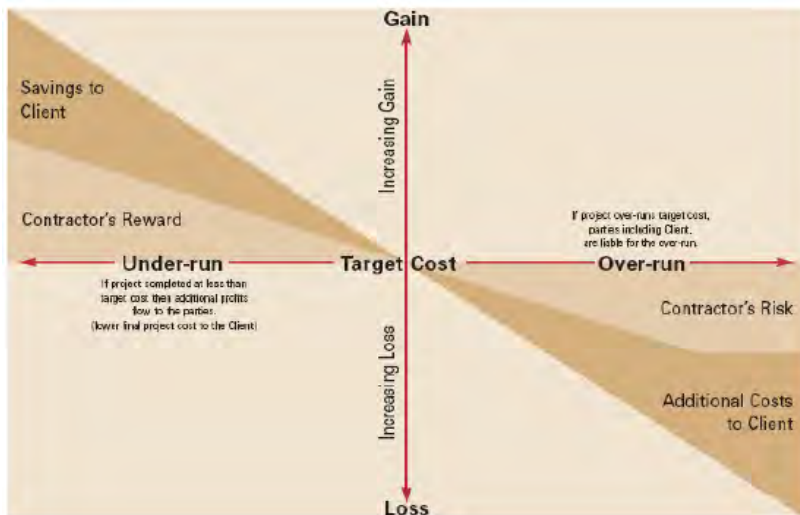
Start from design and planning

Active communication



Build relationship with quick response and care

Innovative Procurement Strategy



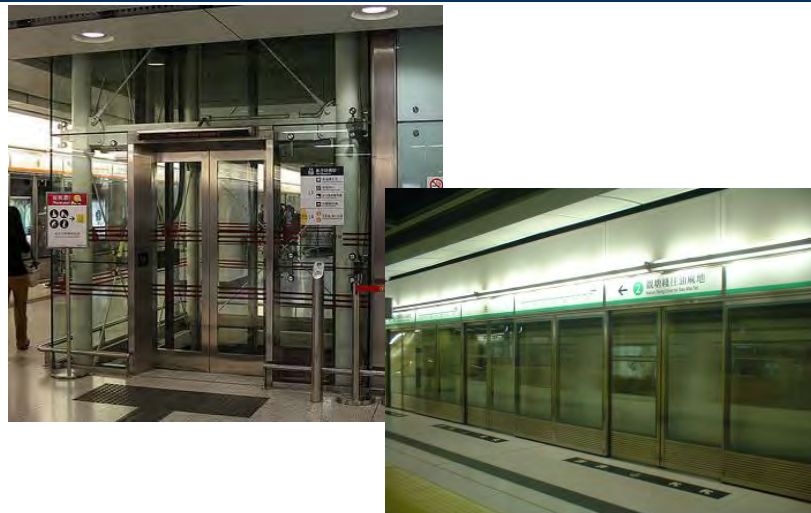
Target Cost Contract for Complex and High Risk Area



Whole Life Cycle Approach for Rolling Stock

- Better allocation of risks
- Consider long-term benefits

- Price saving
- Standardization of spare parts
- Lower financial and reliability risk

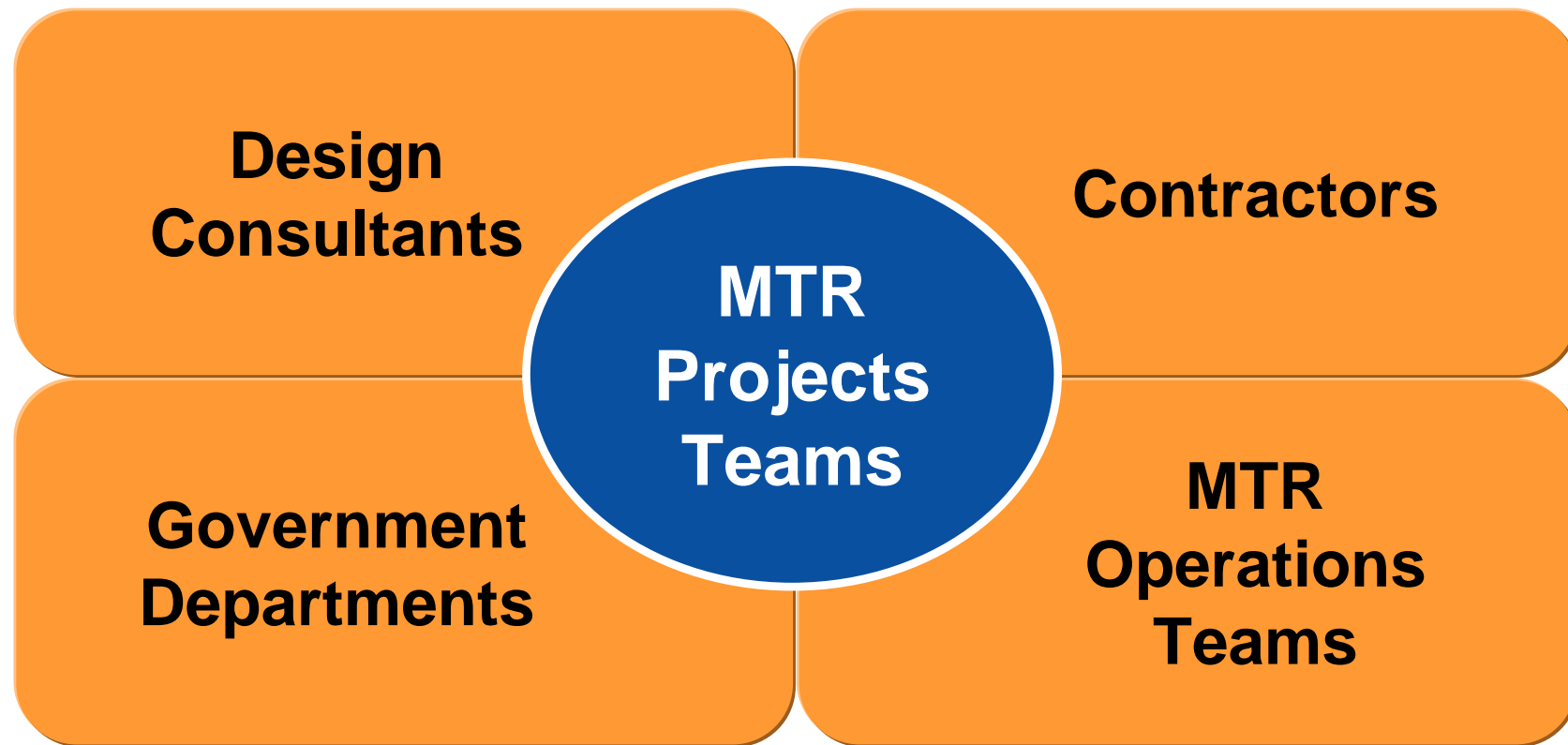


Bundle E&M Contracts for WIL, SIL(E) & KTE



Performance Guarantee Project for Energy Saving Projects

Collaboration among Different Parties



Partnering - As a Team, We Can Be More Effective!



Talent Development

1. Collaborate with CIC to provide hands-on, on-the-job training
2. Inspectorate Training Scheme for Works Supervisors
3. Contractor Cooperative Training Scheme
4. Job Fairs



To move forward as a **CARING** industry

To create a **HARMONIOUS** working environment for the industry

To make a **PROGRESSIVE** industry



Thank You