

ENGINEERING CAREER PROSPECTS AND OPPORTUNITIES IN HONG KONG



HK  E

THE HONG KONG
INSTITUTION OF ENGINEERS
香港工程師學會

PROUD TO BE
ENGINEERS
以工程師為傲
TIME TO CHANGE 專業維新



**Like engineering,
mountain-biking
requires a precise mix
of technology, precision
and know-how**



Opportunities in Hong Kong



In the past, Hong Kong Engineers contribute a lot in the Hong Kong Infrastructure

What's next?



Airport



Hong Kong-Zhuhai-Macau Bridge



Tsing Ma Bridge



MTR System

HONG KONG'S ROADMAP



**Northern
Metropolis**



**Harbour
Metropolis**



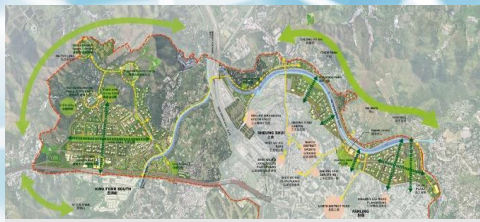
**New Housing
and Land
Developments**



Re-industrialisation



**Technology and
Innovations hub**



**Kwu Tung North / Fanling North
New Development Area**



Lok Ma Chau Loop Development Area

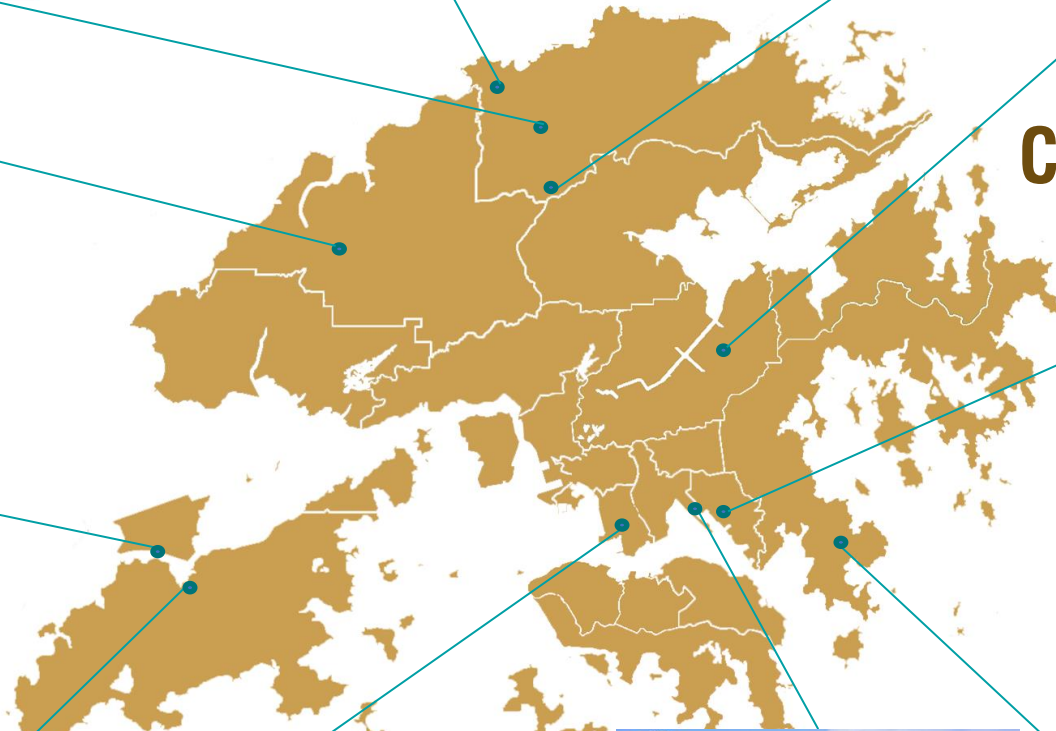


Shek Wu Hui Effluent Polishing Plant



Relocation of Sha Tin Sewage Treatment Works to Caverns

Current Major Civil Works



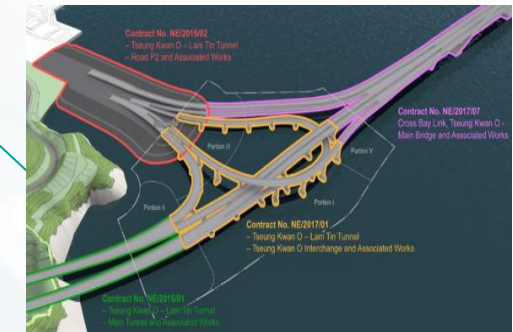
**Hung Shui Kiu / Ha Tsuen
New Development Area**



Trunk Road T2 and Cha Kwo Ling Tunnel



Three Runway System Project



Tseung Kwan O - Lam Tin Tunnel



Tung Chung New Town Extension



Central Kowloon Route



Kai Tak Development

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LAND DEVELOPMENT PROJECTS



**Tseung Kwan O
Area 137**



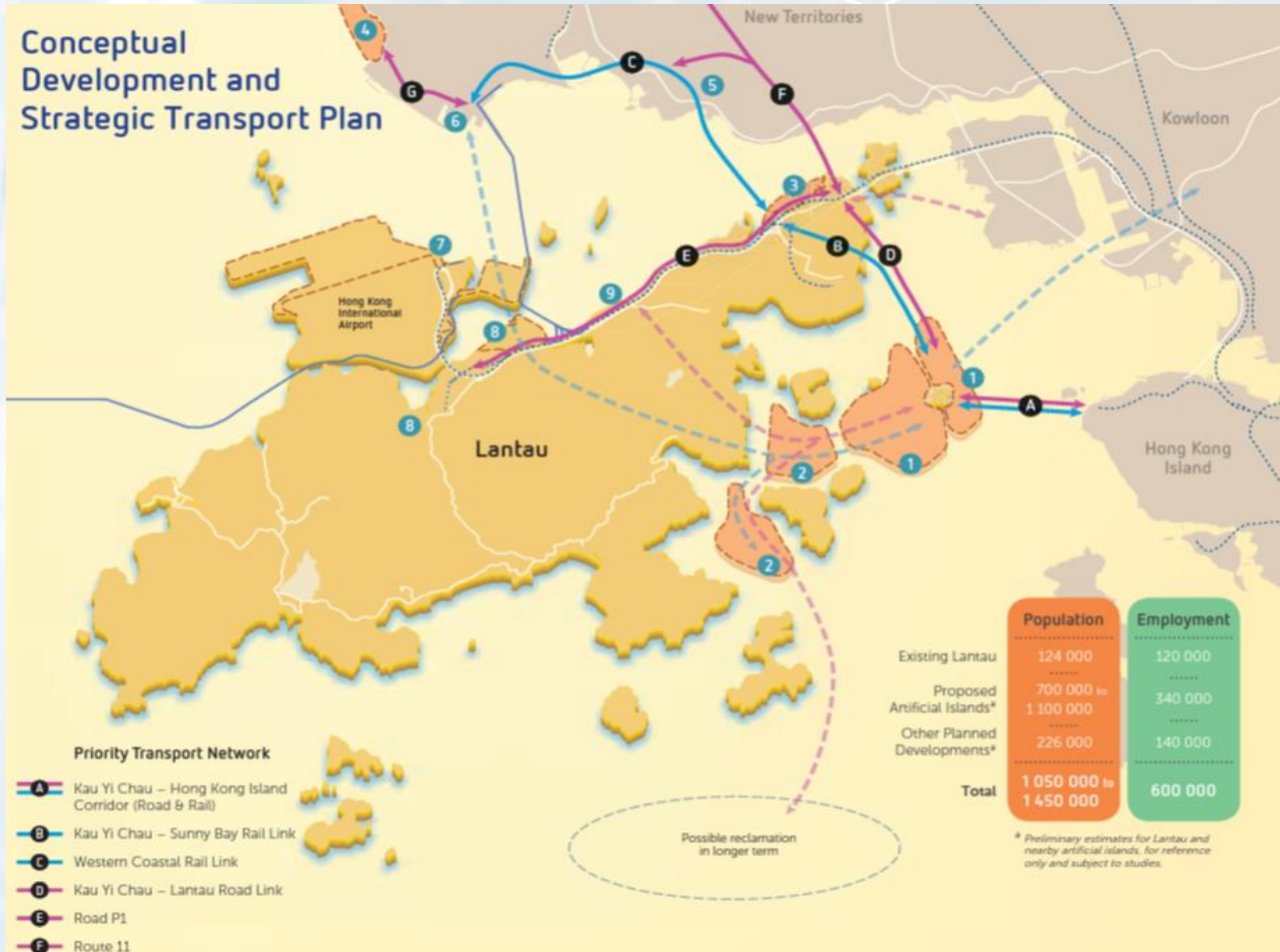
**Northern
Metropolis**



**Kau Yi Chau
Artificial Islands**

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LAND DEVELOPMENT - KAU YI CHAU ARTIFICIAL ISLANDS



2018 Policy Address

- Launch the “Lantau Tomorrow Vision”

2022 Policy Address

- The KYC Artificial Islands will expand the scope and capacity of HK’s development and greatly enhance HK’s competitiveness as a financial, commercial and trade centre.

Development Potential

- A new land of **1,000 hectares**
- To build **150,000 to 260,000 housing units** to accommodate residential **population of around 400,000 to 700,000**
- To create a work-live-play **CBD3** with **4M m² floor area** to bring about **200,000 job opportunities**

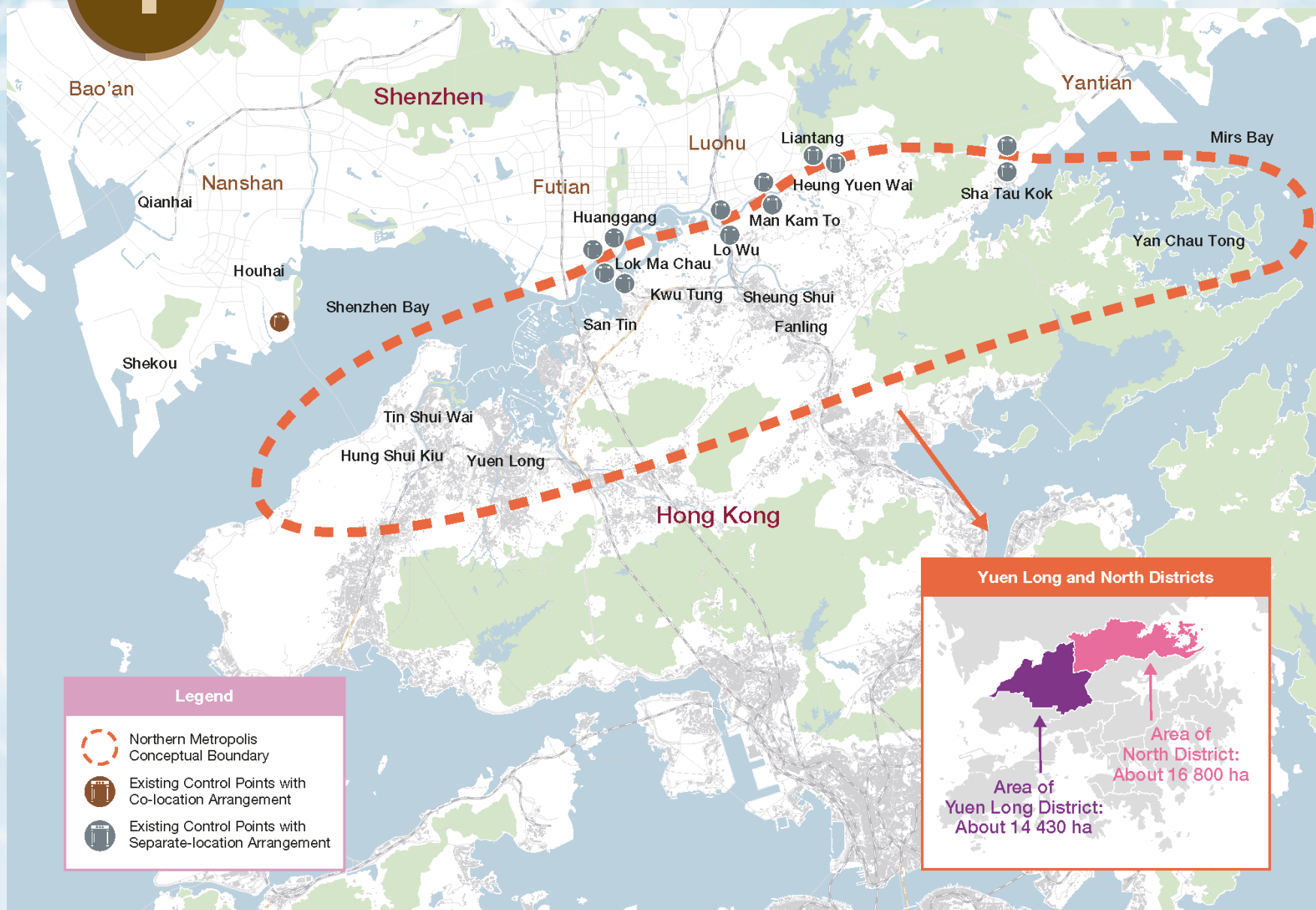


Tentative Dates:

- Commence the Environmental Impact Assessment process in 2023
- Kick-start the reclamation works in 2025

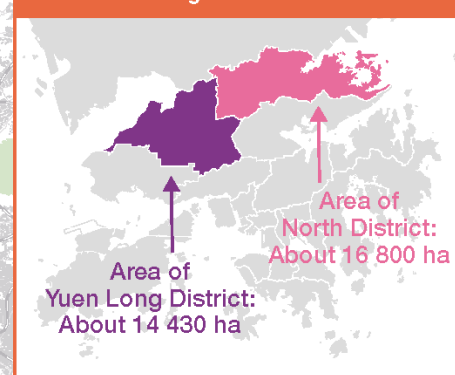
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LAND DEVELOPMENT - NORTHERN METROPOLIS



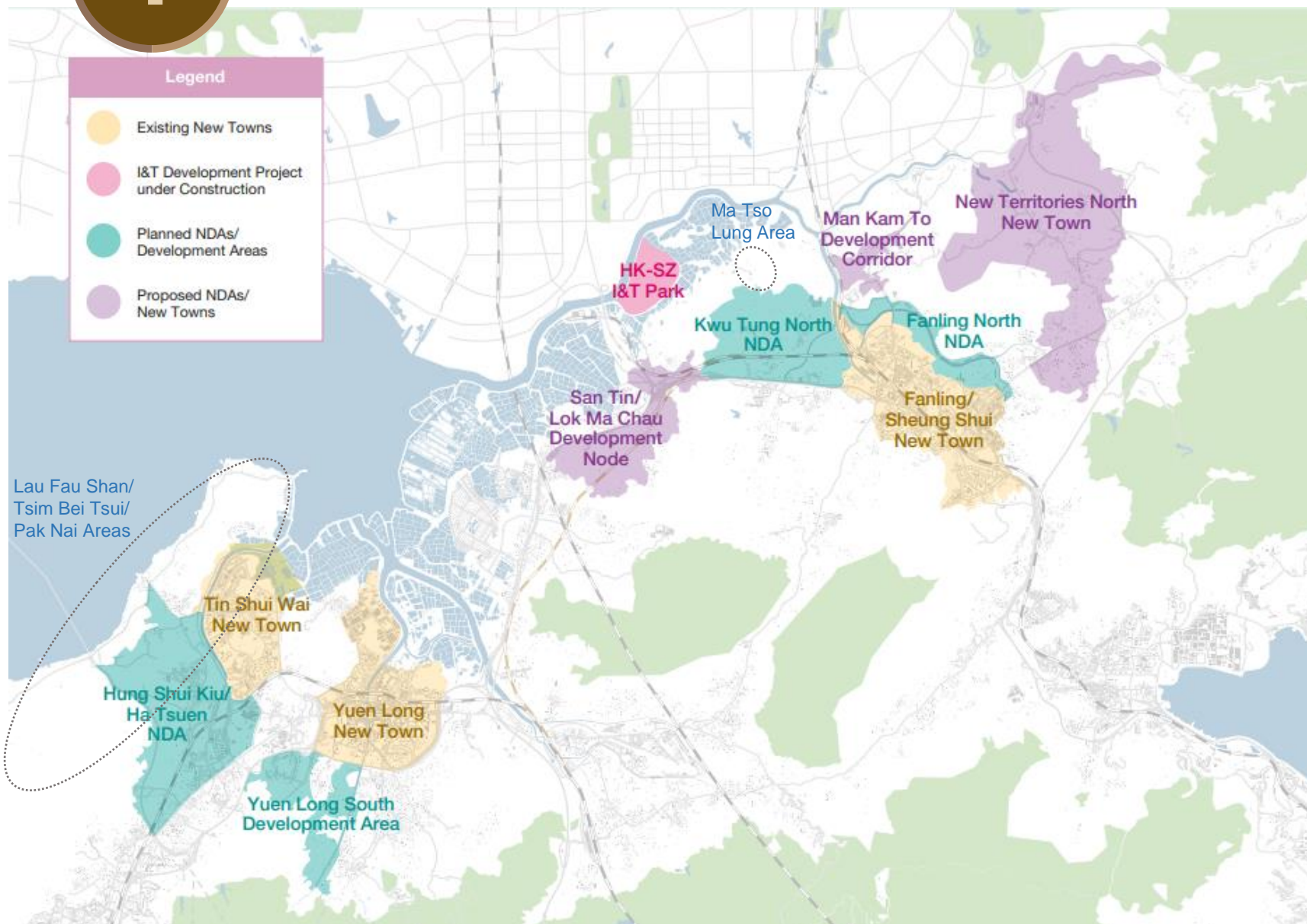
- Total land area of **30 000 ha**
- Cover **Yuen Long District** and **North District**, including Yuen Long, Tin Shui Wai, Fanling, Sheung Shui and various new development areas
- **With innovation & technology (I&T) industry as the economic engine**
- Emerge as a “**New International I&T City**”, integrating quality life, new economies, and culture and leisure

Yuen Long and North Districts



1

LAND DEVELOPMENT - NORTHERN METROPOLIS



Kwu Tung North & Fanling North

- Works started progressively from 2019. The first batch of population intake for private and public housing expected in 2023 and 2026 respectively.

Hung Shui Kiu and Yuen Long South

- Works also started and for Hung Shui Kiu, expecting the first population intake in 2024

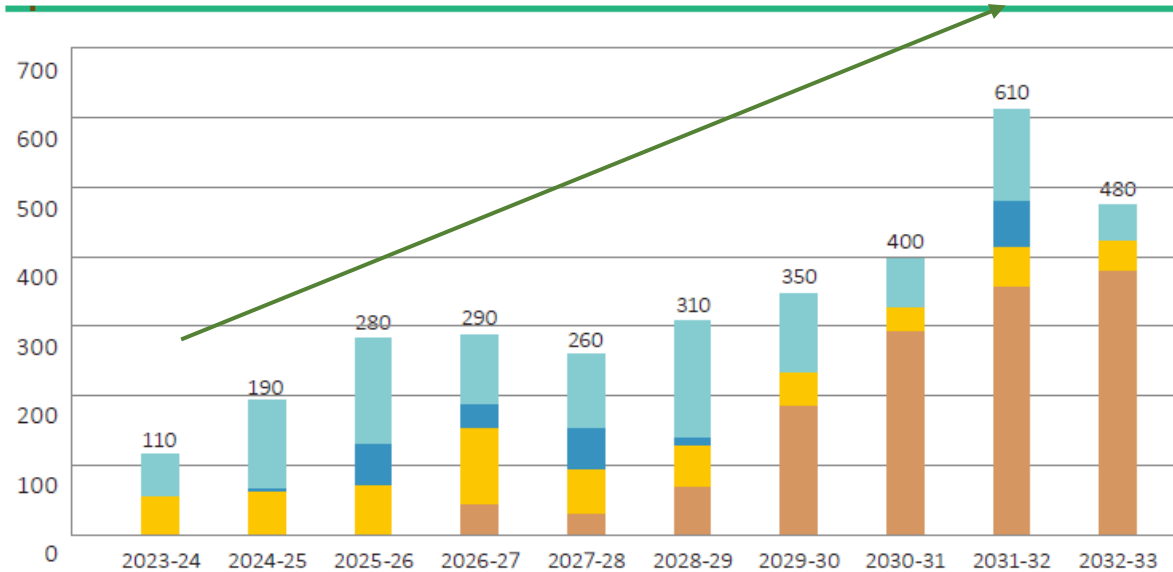
Other New Studies

- San Tin Development Node
- Lo Wu/Man Kam To Comprehensive Development Node
- Lau Fan Shan/Tsim Bei Tsui/Pak Nai Areas
- Ma Tso Lung Area

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LAND DEVELOPMENT

未來十年可供發展土地供應預測 (公頃)
10-Year Supply Forecast of Developable Land (in ha)



主要土地來源 Major Sources of Land	TCNTE	TCNTE	TCNTE	HSK/HT	HSK/HT	TKO 137	KYC	KYC	KYC	KYC
	210 Sites	210 Sites	HSK/HT	KTN/FLN	KTN/FLN	ST/LMC DN	TKO 137	ST/LMC DN	LKT/TMW	YLS

■ 具體用途正在研究的用地*
Land Use Under Study*
 ■ 房屋用地
Housing Land
 ■ 經濟用地
Economic Land
 ■ 政府、機構或社區用地、休憩用地及道路基建
Government, Institution or Community (G/IC) Land, Open Space and Road Infrastructure

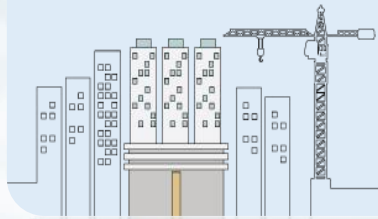
* 房屋用地／經濟用地／政府、機構或社區用地、休憩用地及道路基建的分佈尚未訂定。
The split among housing land, economic land and G/IC land, open space and road infrastructure to be determined after study.

- Supply of developable land will reach **3,280 ha** and show an **upward trend**
- from **110 ha** in the first year to some **480 ha** in 2032-33

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HOUSING DEVELOPMENT - TEN-YEAR HOUSING PLAN

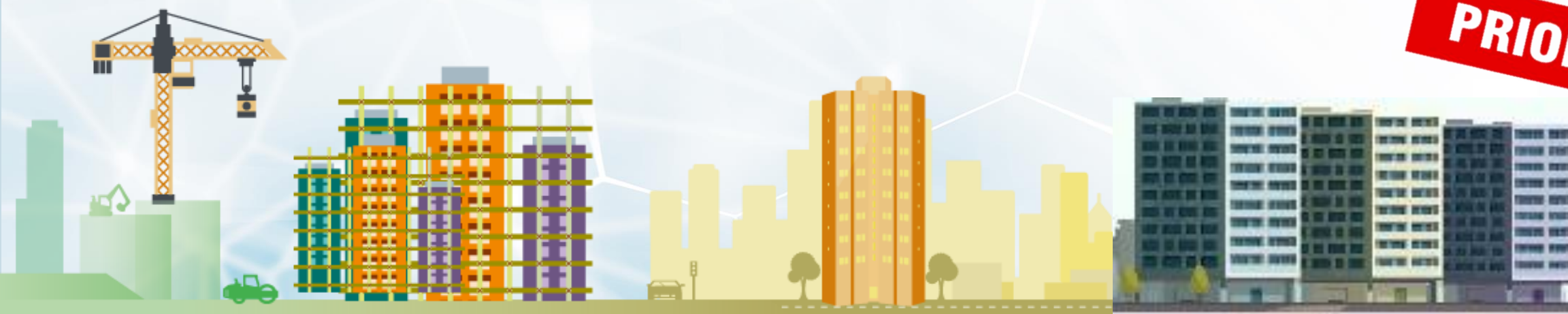
301,000 public housing units



129,000 private housing units

Total Housing Supply Target: 430,000 units

PRIORITY



2

HOUSING DEVELOPMENT - ENHANCING QUANTITY, SPEED, EFFICIENCY AND QUALITY

- ✓ **New Light Public Housing: 30,000 units** to be built in the coming five years (from 2023-24 to 2027-28)
- ✓ **Overall public housing production: increase ~50%** in the coming five years
- ✓ **Get ready land supporting $\geq 72,000$ residential units** in total for disposal through land sales or railway property developments in the coming five years





TRANSPORTATION DEVELOPMENT - THREE MAJOR ROAD PROJECTS AND THREE RAILWAY PROJECTS



Policy Address 2022: Three New Railways

1. Hong Kong - Shenzhen Western Rail Link
2. Central Rail Link
3. Tseung Kwan O Line Southern Extension

Policy Address 2022: Three New Roads

1. Northern Metropolis Highway
2. Shatin Bypass
3. Tseung Kwan O - Yau Tong Tunnel

➤ Bring a highly inter-connected and accessible road network and rail system, and vigorously drive and support future development of Hong Kong



TRANSPORTATION DEVELOPMENT- OTHER ROAD AND RAILWAY PROJECTS

----- Road infrastructures under planning

- Route 11
- Tsing Yi-Lantau Link
- Tuen Mun Bypass
- Improvements work of Lion Rock Tunnel

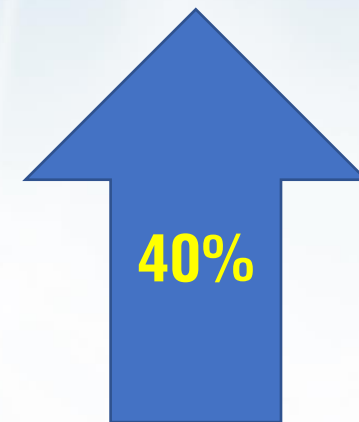
----- Railways under planning

- Tung Chung Line Extension, Oyster Bay Station and Tuen Mun South Extension
- Railway for the Kau Yi Chau Artificial Islands
- Science Park/Pak Shek Kok Station of the East Rail Line
- Northern Link

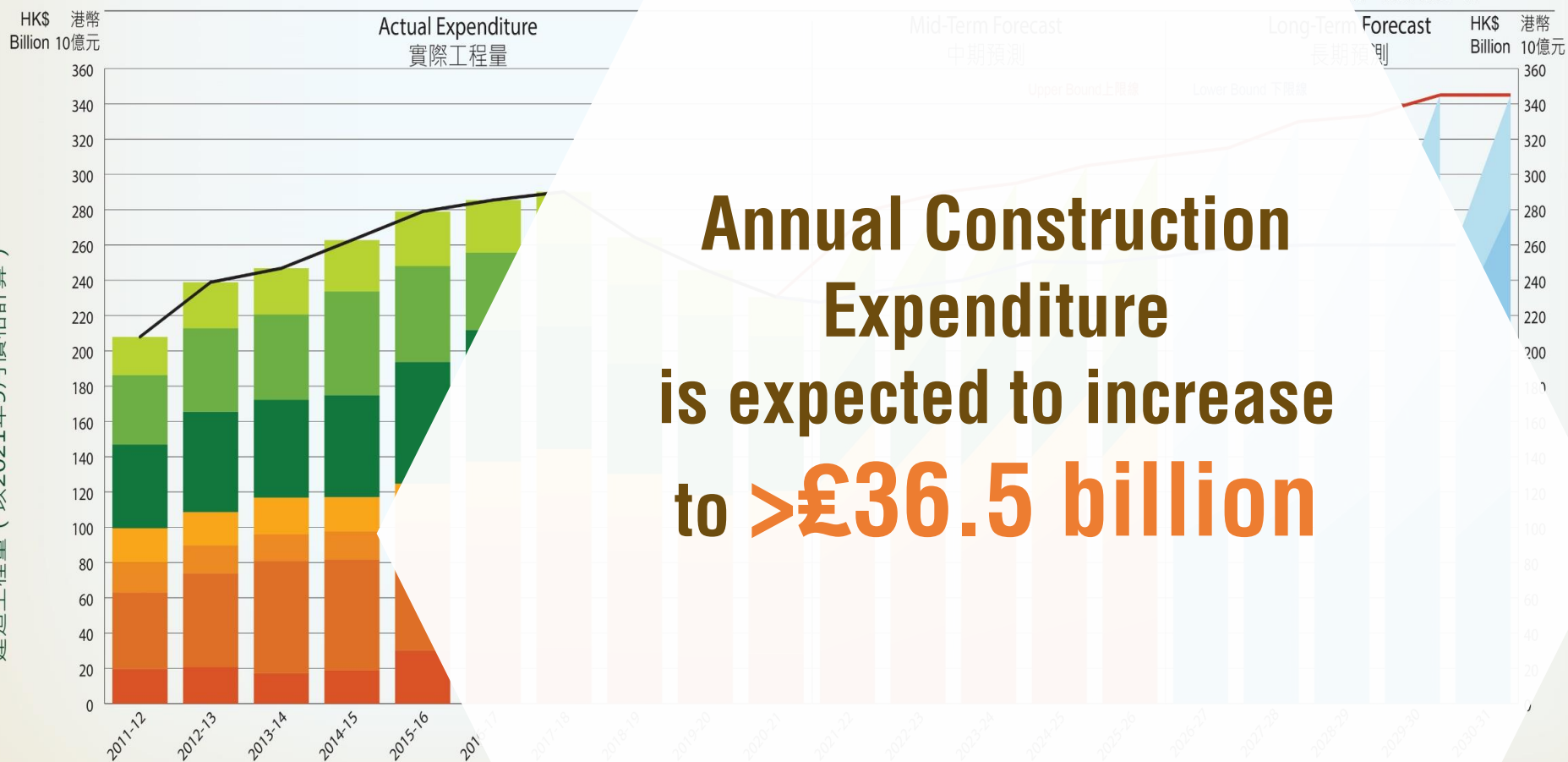


OVERALL CONSTRUCTION EXPENDITURES

Construction Expenditure Forecast for Public and Private Sectors (Updated In May 2022)



Construction Expenditure (in September 2021 Prices)
建造工程量 (以2021年9月價格計算)



Annual Construction Expenditure is expected to increase to >€36.5 billion

Actual Expenditure & Mid-Term 實際工程量及中期預測

	Public Sector 公營界別	Private Sector 私營界別
E&M Works* 機電工程*		
RMAA Works* 裝修及維修工程*		
Civil Works 土木工程		—
Building Works 建造工程		

Long-Term 長期預測

	Public Sector 公營界別	Private Sector 私營界別
E&M Works* 機電工程*		
RMAA Works* 裝修及維修工程*		
Civil Works 土木工程		
Building Works 建造工程		

*機電工程 - 電力與機械工程

*E&M Works - Electrical and Mechanical Works

*裝修及維修工程 - 維修、保養、改建及加建工程

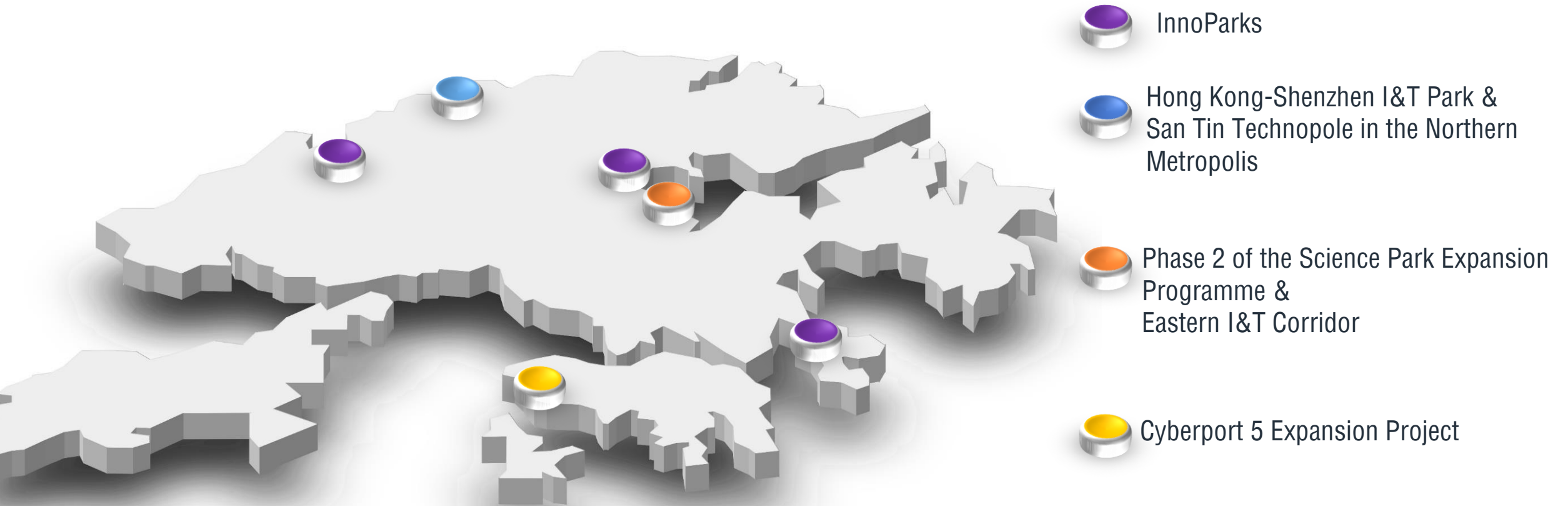
*RMAA Works - Repair, Maintenance, Alteration and Additional Works

PROMULGATE HK INNOVATION AND TECHNOLOGY DEVELOPMENT BLUEPRINT

Four Major Development Directions

- 1. Enhance the I&T ecosystem and achieve re-industrialisation in HK**
- 2. Enlarge the I&T talent pool to create strong impetus for growth**
- 3. Develop HK into a smart city to improve the quality of life of our people**
- 4. Proactively integrate into the overall development of the country and consolidate HK's advantages as an international city**

Infrastructures





✓ Enlarge the I&T Talent Pool

- **Attract leading I&T talents around the globe**
- **Enhance existing technology talent schemes**
- **Enhance accommodation support**
- **Expand the STEM Internship Scheme**



Greater Bay Area



Northern Metropolis



Tech & Innovation Hub



Harbour Metropolis

大嶼山
Lantau Island

香港島
Hong Kong Island

南丫島
Lamma Island

What could be better than this golden age for **becoming an engineer?**

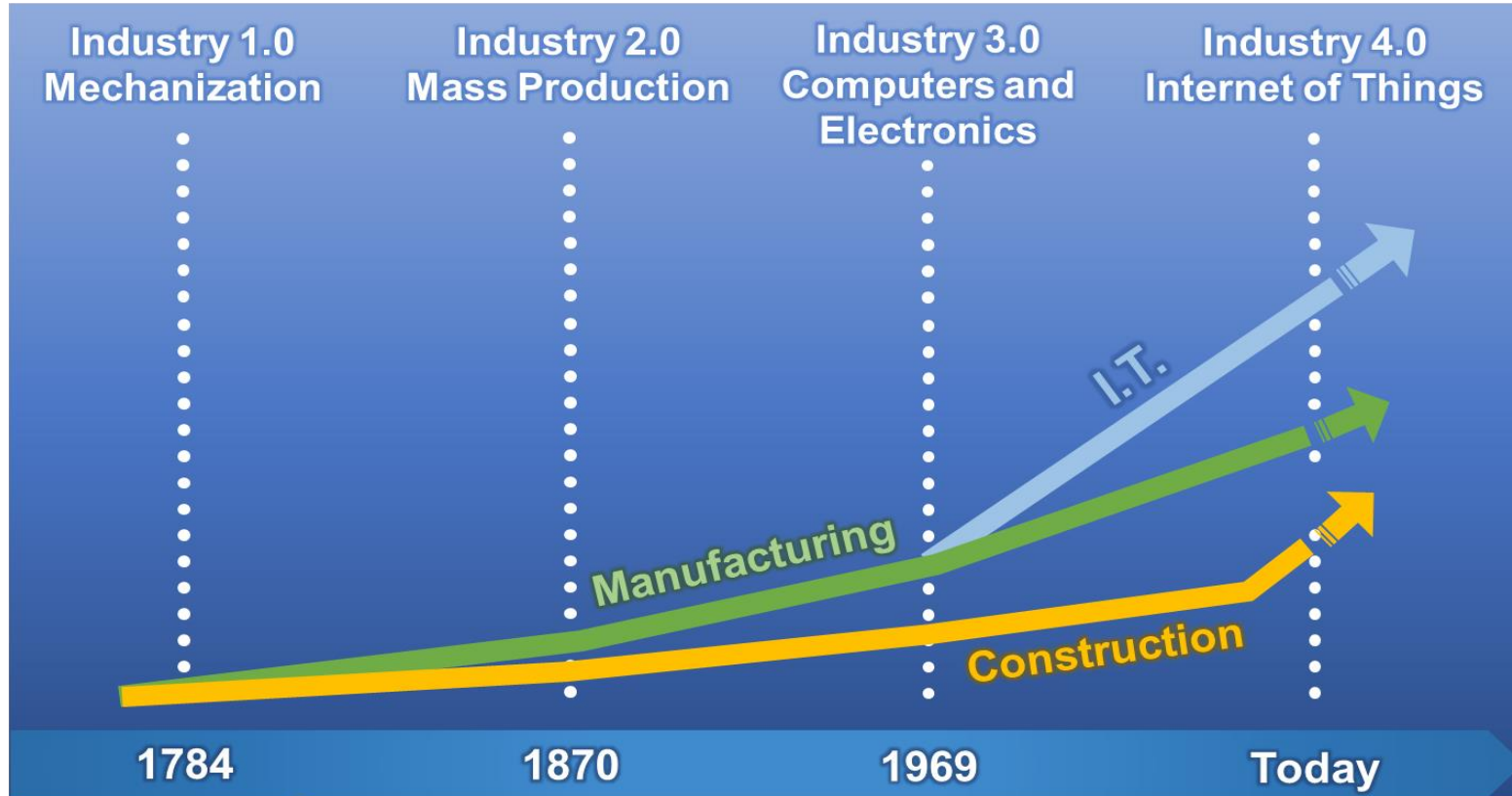
Get Ready to Meet the Opportunities and Challenges Ahead Hong Kong



Opportunities abound for Hong Kong Infrastructures & Developments



We Have to Work Smarter



Expediting Development (提速)

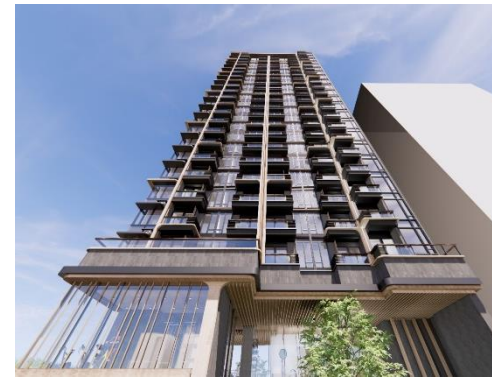
Improving Efficiency (提效)

Increasing Quantity (提量)

Raising Quality (提质)



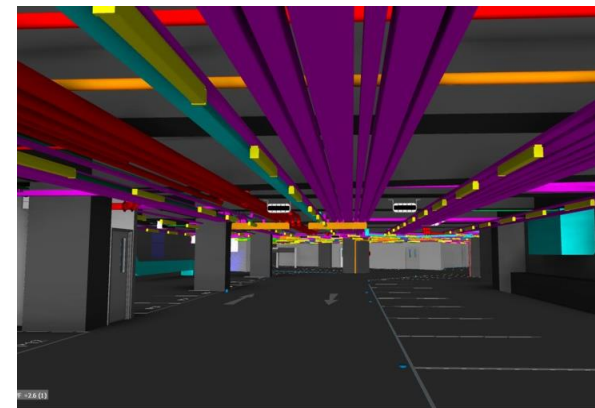
Modular Integrated Construction (MiC)



MiC

- > 70 public and private building projects
- Construction time ↓ 30-50%
- On-site productivity ↑ 100-400%
- ↑ Waste reduction
- ↑ Site safety

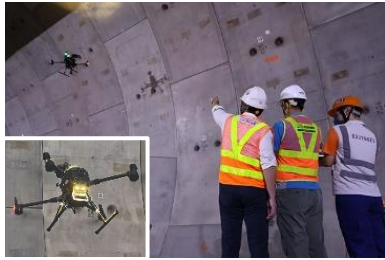
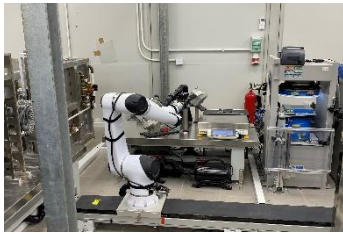
Building Information Modelling (BIM)



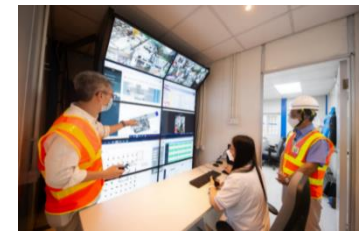
BIM

- Mandatory BIM for public works \geq £ 3.14M
- Applications in > 400 public works projects
- 4D BIM - programming
- 5D BIM - cost planning & control
- 6D BIM - asset management

Wider Application of New Technologies



690 High Strength Steel

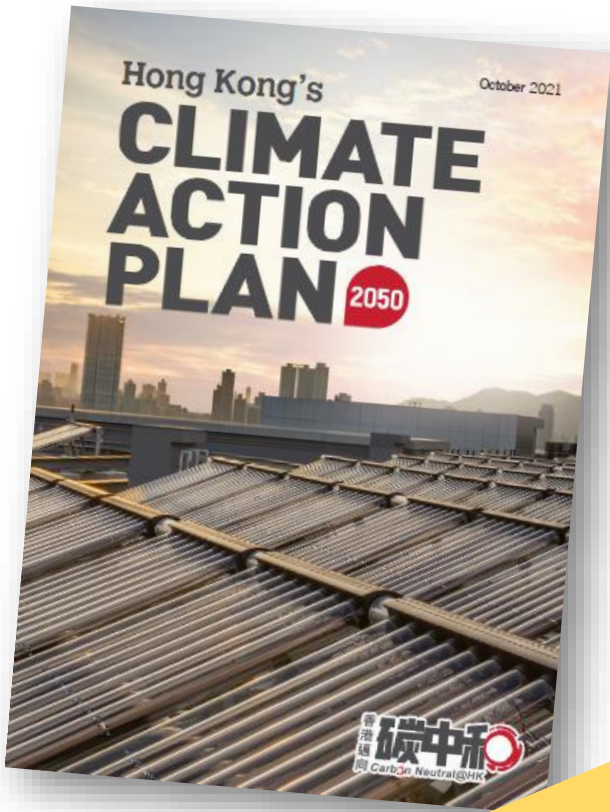


Vibration Resisting Concrete Lining in Cavern Construction

Self-compacting Backfill Materials



Climate Change and City Resilience



Revitalization of Tsui Ping River

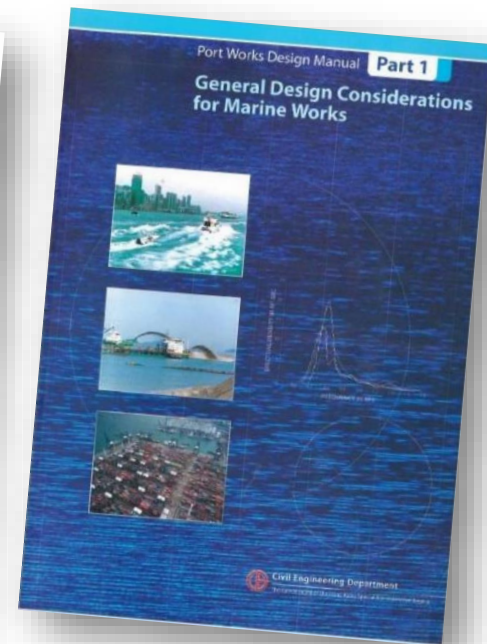
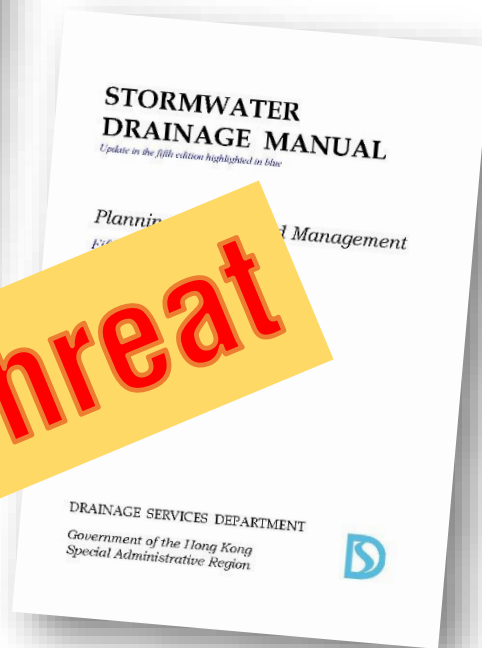


Tseung Kwan O Desalination Plant



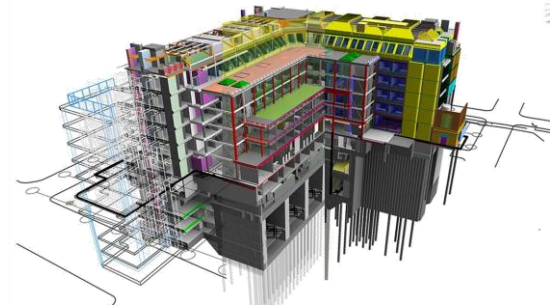
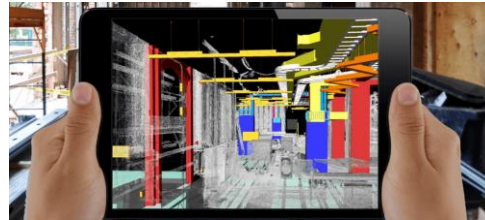
Eco-shoreline at
Tung Chung
New Town Extension

Global Threat



What the industry is looking for?

- **New Challenges** : aging force, ascending construction volume, productivity, cost, efficiency, safety, sustainability, carbon neutrality, public aspiration ...
- Looking for **smarter solutions**: MiC, DfMA, MiMEP, BIM, DWSS, CDE, IoT, AI, AR, VR, Digital Twins, Robotics, NEC, ...
- Looking for **smarter people**: technical, innovation, project management, contractual, presentation skills, network ...



HKIE Qualification



HKIE as Qualifying Body

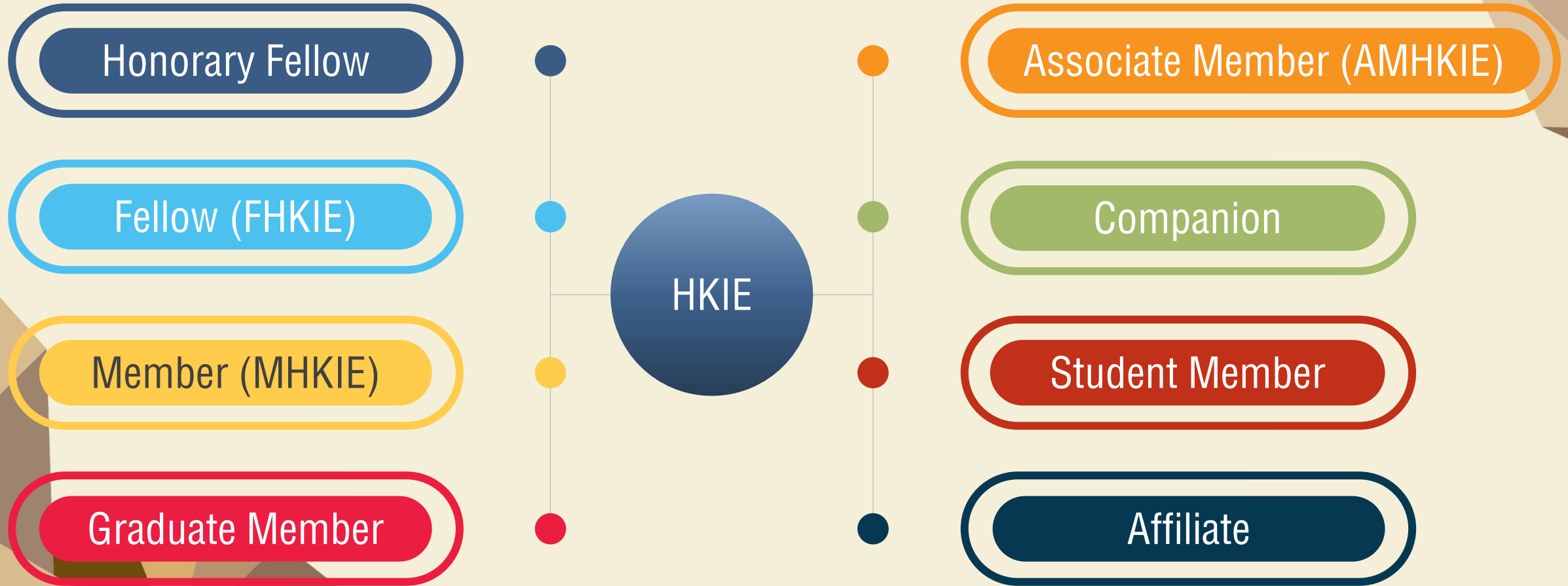
Professional Quality

Set standards for the Education, Training and Professional Assessment of Engineers

21 Engineering Disciplines

- Aircraft
- Biomedical
- Building
- Building Services
- Chemical
- Civil
- Control, Automation & Instrumentation
- Electrical
- Electronics
- Energy
- Environmental
- Fire
- Gas
- Geotechnical
- Information
- Logistics & Transportation
- Manufacturing, Industrial & Systems
- Marine & Naval Architecture
- Materials
- Mechanical
- Structural

Classes of Membership



Eligibility and Fees for Student Membership

Eligibility

A student is studying an engineering degree, higher diploma or associate degree

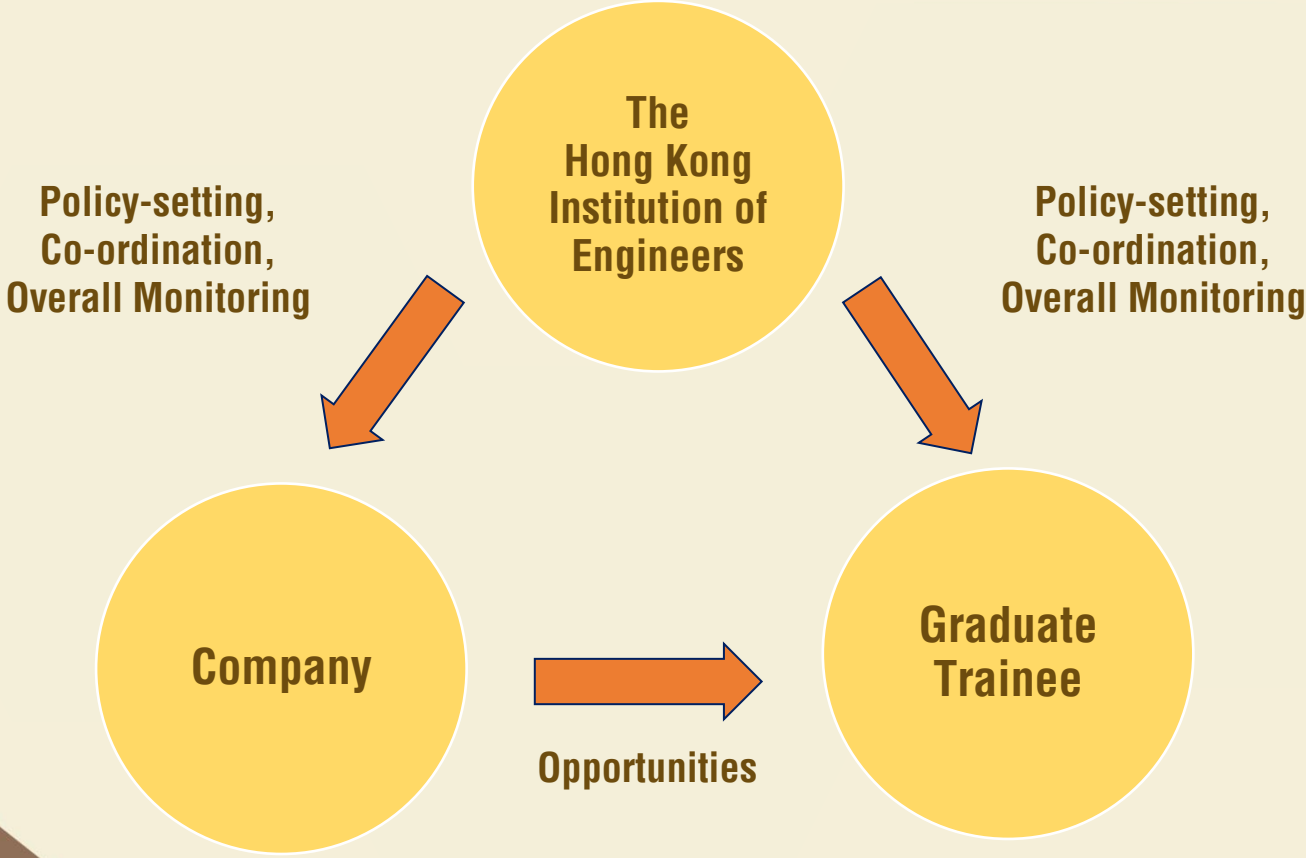
- (a) accredited by the HKIE, or
- (b) in UK and Canada that is recognised under Washington Accord and Sydney Accord.



Fees

It's free for the first four years provided that the Student Member is studying an accredited engineering programme meeting the criteria stated on the left.

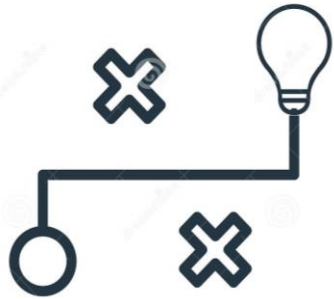
The HKIE Formal Training Schemes (Scheme “A” Graduate Training)



Preparation for being Prospective Engineer



Development of Personal Qualities



Problem-solving



Creativity



Critical Thinking



Teamwork



Adaptation to Changes



Project Management



Written Communication Skills

Looking Ahead



Professional acumen



Integrity & Ethics

Responsibilities to society



Be prepared to meet the challenges



HKIE - Time to Change
Commitment to Change -
Boosting Professionalism
香港工程師學會 - 專業維新

**WE ARE
PROUD
TO BE
ENGINEERS**

以工程師為傲

- **Deliver our Services to the Community Professionally with Heart and Diligence**
- **Tell Good Engineering Stories**
- **Nurture Talented Successors**

**WE ARE PROUD
TO BE ENGINEERS!**



PROUD TO BE AN ENGINEER





THE HONG KONG INSTITUTION OF ENGINEERS

香港工程師學會

- No reason for you not to feel proud of being an engineering student.
- You have chosen the most correct decision to have joined the career path for a most noble profession with promising future.

*Ir Aaron BOK Kwok-ming
President, The HKIE*

**BE PROUD
TO BE ENGINEERS
THANK YOU**

