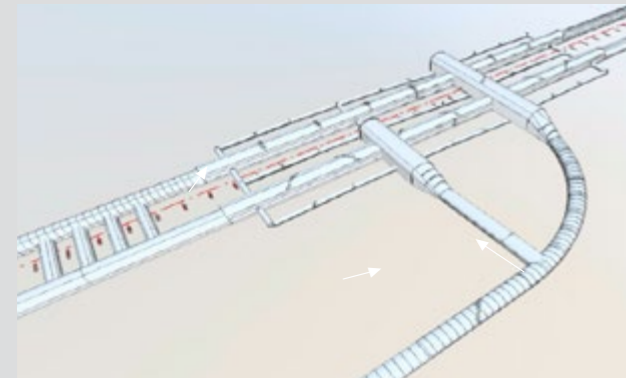
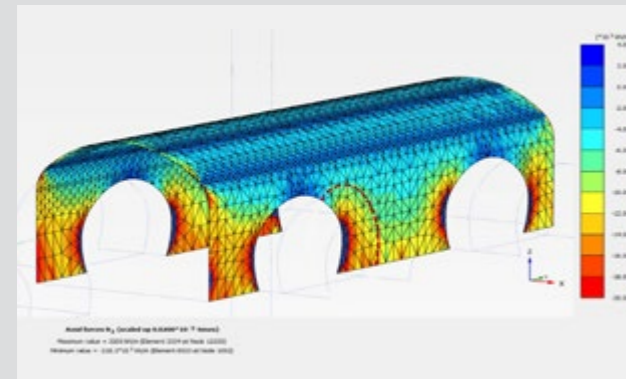
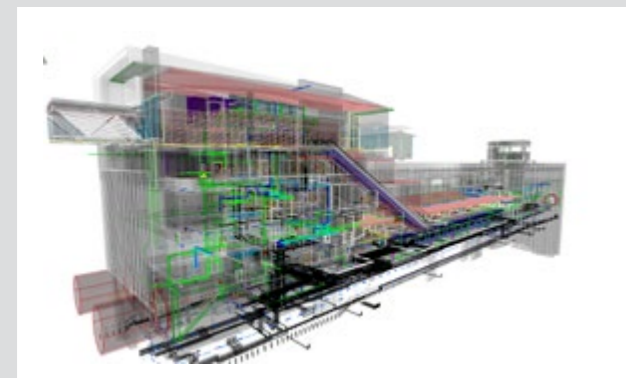


# Tunnelling and Underground Structures

Asia



**AECOM's tunnelling practice provides the expertise of a truly global service firm and applies advanced design techniques such as Building Information Modeling (BIM), 2D/3D Finite Element Method (FEM), Augmented and Virtual Reality (AR/VR) for innovative and cost-effective solutions.**



**Tunnelling and underground expertise**

- Cut-and-cover tunnels and stations
- Tunnel boring machine (TBM) tunnels
- Drill and blast tunnels
- New Austrian Tunnelling Method (NATM)
- Immersed tube tunnels
- Jacked box tunnelling
- Underground quarrying
- Deep excavation
- Large and deep shafts
- Pipe jacking and micro-tunnelling
- Raiseboring
- Ground improvement
- Tunnel M&E system design
- Tunnel ventilation design
- Tunnel fire-life safety design

**Specialized services**

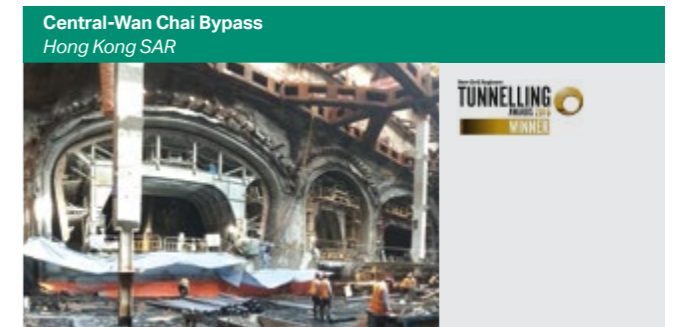
We offer an extensive range of tunnelling and underground engineering services to governments, infrastructure owners, private developers, contractors and operators.

- Feasibility study
- Concept, basic and detailed design
- Planning and environmental engineering
- Geological and hydrogeological study
- Geotechnical baseline reports
- Economic/financial analysis
- Project and construction management
- Tunnel risk management
- Technical advisory

**Internationally acclaimed**



**Liantang/Heung Yuen Wai Boundary Control Point (BCP)**  
Hong Kong SAR  
Drill and blast, ø14.1 m OD Earth pressure balance (EPB) TBM



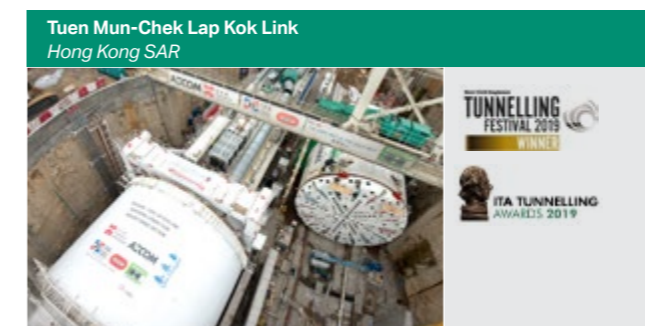
**Central-Wan Chai Bypass**  
Hong Kong SAR  
Trinocular, offshore cut-and-cover tunnel



**Hong Kong-Zhuhai-Macao Bridge**  
China  
Longest road immersed tube tunnel



**MTR Shatin to Central Link Immersed Tube Tunnel**  
Hong Kong SAR  
1.7-km-long railway immersed tube tunnel



**Tuen Mun-Chek Lap Kok Link**  
Hong Kong SAR  
Largest tunnel boring machine (TBM) in the world, ø17.6 m OD



**Tseung Kwan O-Lam Tin Tunnel**  
Hong Kong SAR  
Large-scale semi-caverns as part of road tunnels

**Pioneering engineering**



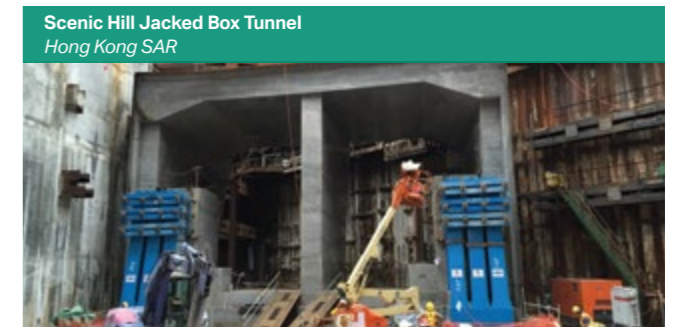
**Relocation of Sha Tin Sewage Treatment Works to Caverns**  
Hong Kong SAR  
Sustainable use of underground space – New Civil Engineer Award 2015



**Express Rail Link (XRL)**  
Hong Kong SAR  
Largest rock cover (650 m) and longest tunnel (7.6 km) in Hong Kong SAR



**Harbour Area Treatment Scheme (HATS)**  
Hong Kong SAR  
Deepest sub-sea tunnel (160 m below sea) in Hong Kong SAR



**Scenic Hill Jacked Box Tunnel**  
Hong Kong SAR  
First jacked box highway tunnel in Hong Kong SAR





### Representative projects

#### Mainland China

- Chongming South Channel Tunnel
- Qianhai-Nanshan Deep Tunnel Drainage System
- Shanghai Bund Sightseeing Tunnel
- Guangzhou Zhoutouzui Immersed Tunnel

#### Hong Kong SAR

- Central-Wan Chai Bypass Link
- Liantang/Heung Yuen Wai Boundary Control Point\*
- Harbour Area Treatment Scheme (HATS) Stage 2A
- Hong Kong West Drainage Tunnel
- Hong Kong West Kowloon Station
- Hong Kong-Zhuhai-Macao Bridge Immersed Tube Tunnel & Artificial Islands\*
- Lai Chi Kok Drainage Tunnel
- MTR XRL Contract 822, 823A+B, 826
- MTR Shatin to Central Link Contract, 1108, 1121, 1128
- MTR Kwun Tong Line Extension Contract 1001
- MTR South Island Line (East) Contract 904
- MTR West Island Line Contract 703
- Tseung Kwan O-Lam Tin Tunnel
- Tuen Mun-Chek Lap Kok Link\*
- T2 Trunk Road

#### Southeast Asia

- Bangkok Mass Rapid Transit (MRT) Blue Line Extension\*
- Ho Chi Minh Metro Line 1\*
- Johor Bahru-Singapore Rapid Transit System Link
- Kuala Lumpur Klang Valley MRT Line 1\* and 2
- Kuala Lumpur-Singapore High Speed Rail
- Singapore Cable Tunnel East West
- Singapore Common Services Tunnel
- Singapore Deep Tunnel Sewerage System Phase 2
- Singapore Jurong Island-Pioneer Cable Tunnel
- Singapore Downtown Line\*
- Singapore MRT Circle Line Stage 1, 2, 4, 5 & 6
- Singapore MRT Downtown Line 1 & 2
- Singapore MRT Thomson Line Contracts T225 & T228
- Singapore NEWater Infrastructure Plan Extension C4

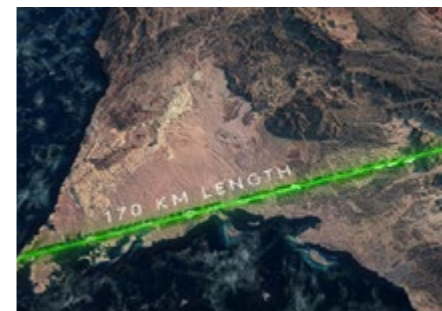
\*Refer to page 5 for further details

**AECOM, as one of the largest engineering and design companies in the world, is capable of developing turnkey solutions incorporating leading tunnelling and underground engineering skills.**

AECOM provides a full range of tunnelling and underground structure design and management services serving clients in both the public and private sectors across Asia. We provide one-stop access to services ranging across project and construction management, feasibility studies, concept, basic and detailed design, and risk management for all types of tunnelling and underground works.

Our team has established expertise in the design of different tunnel types and are experienced in the application of various international codes and guidelines from Europe, the U.S., China, Japan, Singapore, Australia, New Zealand, India and many others. We have expertise in specialized areas such as seismic and blast-resistant designs and ground improvement methods. AECOM has been involved in many award-winning signature projects. We have received prestigious awards from the ITA, NCE, ENR and various industrial award-giving bodies.

With offices spread across Asia, AECOM is able to offer both local expertise and international collaboration to deliver the most complex and challenging projects.



**NEOM Spine Infrastructure**  
Drill and blast railway tunnels  
Kingdom of Saudi Arabia

**Client:**  
NEOM

**Services:**  
Concept, preliminary and detailed design



**Hong Kong-Zhuhai-Macao Bridge**  
Longest road immersed tube tunnel  
China

**Client:**  
China Communications  
Construction Co. Ltd.

**Services:**  
Construction, project and risk  
management consultancy,  
technical advisory



**Tuen Mun-Chek Lap Kok Link**  
Largest TBM in the world, ø17.6 m OD  
Hong Kong SAR, China

**Client:**  
Highways Department,  
HKSAR Government

**Services:**  
Preliminary design, tendering, detailed  
design of enabling works, construction  
supervision, environmental impact  
assessment (EIA)



**Liantang/Heung Yuen Wai BCP**  
Drill and blast, ø14.1 m OD EPB TBM  
Hong Kong SAR, China

**Client:**  
Civil Engineering and Development  
Department, HKSAR Government

**Services:**  
Preliminary design, tendering,  
contract management,  
construction supervision



**Singapore Downtown Line**  
Cut-and-cover stations, Singapore

**Client:**  
Land Transport Authority (LTA)

**Services:**  
Architectural and engineering design,  
electrical services, environmental  
control system and fire protection



**Singapore MRT Thomson Line C2104**  
Tunnels and station, Singapore

**Client:**  
Land Transport Authority

**Services:**  
Engineering design for civil, architectural  
and electrical and mechanical (E&M)  
works, EIA, temporary works, historical  
land use survey



**Klang Valley MRT Line 1**  
First MRT Line in Malaysia, steel fiber  
reinforced concrete tunnel, ø6.35 m OD

**Client:**  
MMC Gamuda KVMRT

**Services:**  
Engineering design, detailed design and  
supervising consultancy



**Ho Chi Minh City MRT Line 1 CP1b**  
First metro line in Ho Chi Minh City,  
ø6.65 m OD EPB TBM, Vietnam

**Client:**  
Shimizu Maeda Joint Operation

**Services:**  
Detailed design for civil, geotechnical  
and E&M works, project management



**Bangkok MRT Blue Line Extension**  
Sub-river tunnel, ø6.3 m OD EPB TBM  
Thailand

**Client:**  
CH. Karnchang PCL

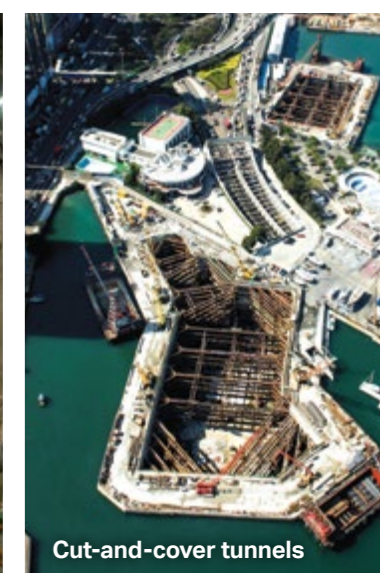
**Services:**  
Detailed design for civil, architectural  
and E&M works, risk management



## Industry recognition

Our work is widely recognized by the industry and brings transformational outcomes to our communities.

Year	Project	Award	Awarding Institution
2020	MTR Shatin to Central Link Immersed Tube Tunnels	Tunnelling Project of the Year (up to US\$500M)	New Civil Engineer (NCE)
2020	Tseung Kwan O-Lam Tin Tunnel Main Tunnel and Associated Works	Environment and Sustainability Initiative of the Year	New Civil Engineer (NCE)
2019	Liantang/Heung Yuen Wai BCP	Tunnelling Project of the Year (Over US\$500M)	New Civil Engineer (NCE)
2019	Tuen Mun-Chek Lap Kok Link-Northern Connection Subsea Tunnel Section	Major Project of the Year (Over €500M)	International Tunnelling Association (ITA)
2019	Tuen Mun-Chek Lap Kok Link	Tunnelling Team of the Year	New Civil Engineer (NCE)
2019	Central-Wan Chai Bypass C15 Contract	16th Tien-yow Jeme Civil Engineering Prize	China Civil Engineering Society & Beijing Tien-yow Jeme Foundation for Development of Science and Technology in Civil Engineering
2018	Hong Kong-Zhuhai-Macao Bridge, Immersed Tunnel and Artificial Islands	Tunnelling Project of the Year (Over US\$1B)	New Civil Engineer (NCE)
2018	The Immersed Tunnel of Hong Kong-Zhuhai-Macao Bridge	Major Project of the Year (Over €500M)	International Tunnelling Association (ITA)
2018	Island & Tunnel Project of Hong Kong-Zhuhai-Macao Bridge	Global Best Project, Bridge/Tunnel Category	Engineering News Record (ENR)
2018	MTR Shatin to Central Link – Causeway Bay Typhoon Shelter to Admiralty Tunnels – Contract No. 1128	Gold Award – International Design for Safety Awards 2018	The Lighthouse Club Hong Kong
2017	Setting up and Implementation of Geographical Information System for the KVMRT SSP Line– Underground Works	Asia Geospatial Excellence Awards 2017, Digital Engineering	GeoSmart Asia
2017	Liantang/Heung Yuen Wai Boundary Control Point – Site Formation & Infrastructure Works Contract 2	Global Tunnel Team of the Year	New Civil Engineer (NCE)
2017	MTR Shatin to Central Link – Causeway Bay Typhoon Shelter to Admiralty Tunnels – Contract No. 1128	Gold Award for Temporary Works Excellence, Civil Engineering Works	Development Bureau, HKSAR Government
2017	MTR Shatin to Central Link – Causeway Bay Typhoon Shelter to Admiralty Tunnels – Contract No. 1128	Designer Innovation of the Year, MTRC Contract 1128 SOV to Admiralty Tunnels	New Civil Engineer (NCE)
2016	Central-Wan Chai Bypass & Island Eastern Corridor Link–Causeway Bay Typhoon Shelter Section (HY/2009/15)	Tunnelling Project of the Year (Over US\$500M)	New Civil Engineer (NCE)
2016	MTR Shatin to Central Link Contract 1103	Highly Commended Tunnelling Project of the Year (US\$50M–US\$500M), NCE International Tunnelling Awards	New Civil Engineer (NCE)
2016	Tseung Kwan O-Lam Tin Tunnel	buildingSMART Hong Kong International BIM Award 2016	buildingSMART Hong Kong
2016	Underwater Domes of Istanbul (Pedestrian Subsea Tunnel)	World Architecture News (WAN) Future Projects Transport Award 2016	World Architecture News (WAN)
2015	Relocation of Sha Tin Sewage Treatment Works to Caverns	Sustainable Use of Underground Space Award	New Civil Engineer (NCE)
2015	Contract 901; Admiralty Station Expansion Project	Specialist Tunnelling Project of the Year	New Civil Engineer (NCE)
2014	Lai Chi Kok Drainage Tunnel	Honour Award, Design Projects Category	International Water Association
2014	Relocation of Sha Tin Sewage Treatment Works to Caverns	Marketing and Communications Award	International Water Association Global Project Innovation Awards
2012	Chongming-Yangtze River Tunnel, Shanghai, China	Major Tunnelling Project of the Year (Over US\$1B)	New Civil Engineer (NCE)
2012-2013	Lai Chi Kok Drainage Tunnel	HKIE Engineering Innovation Award	Hong Kong Institution of Engineers (HKIE)
2011-2012	Chongming-Yangtze River Tunnel, Shanghai, China	National Quality Project Gold Award	China National Award
2011	Hong Kong West Drainage Tunnel	Tunnelling Project of the Year (US\$100M–US\$1B)	New Civil Engineer (NCE)
2011	Tuen Mun-Chek Lap Kok Link-Northern Connection Subsea Tunnel Section	Foresight Award	Tunnels & Tunnelling International





## About AECOM

AECOM is the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical and digital expertise, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of \$13.1 billion in fiscal year 2022. See how we are delivering sustainable legacies for generations to come at [aecom.com](https://aecom.com) and [@AECOM](https://twitter.com/AECOM).

**Contact:**  
**Asia Tunnelling**  
[asiatunnelling@aecom.com](mailto:asiatunnelling@aecom.com)

**Cover Image:**  
Tuen Mun-Chek Lap Kok Link, Hong Kong SAR