

ITA-AITES

WTC 2020

15 - 21 May 2020
Kuala Lumpur, Malaysia



*Innovation and Sustainable Underground
Serving Global Connectivity*

ITA-AITES
**World Tunnel Congress
(WTC) 2020 and
46th General Assembly**

Kuala Lumpur Convention Centre,
Malaysia



BULLETIN #2A

April 2019



An event jointly organised by:



Supported by:

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www.wtc2020.my



Congress Venue: Kuala Lumpur Convention Centre

ITA-AITES

WTC 2020

15 - 21 May 2020
Kuala Lumpur, Malaysia



Innovation and Sustainable Underground Serving Global Connectivity

is more than a slogan for ITA-AITES and its members, it is a challenge to make a commitment to contribute to sustainable development. It is our great honour to share with the global tunnelling fraternity the Malaysian's little success story in innovative tunnelling and underground solutions. The encouragement of innovation and sustainable development in the organisation of WTC 2020, and technical presentations, is a key theme. We would be delighted if we could inspire a whole new generation's of engineers and professionals to be interested in both the works and achievements of ITA-AITES.



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Contact:



IEM

The Institution of Engineers, Malaysia

World Tunnel Congress 2020 Secretariat

IEM Training Centre Sdn. Bhd. (0127273K)

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Email : wtc2020@iem.org.my
Website : www.wtc2020.my

Welcoming Message



Dear Colleagues and Friends,

The Institution of Engineers, Malaysia (IEM) warmly welcomes you to the ITA-AITES World Tunnel Congress (WTC) 2020 and 46th General Assembly in Malaysia which will be held from 15th - 21st May 2020 at the prominent Kuala Lumpur Convention Centre (KLCC).

With the theme “Innovation and Sustainable Underground Serving Global Connectivity”, WTC 2020 will indeed be the world’s leading tunnelling event that will explore the latest innovations, trends and advances in all areas of tunnelling, i.e. from tunnel project development to both design and construction, as well as to tunnel service life cycle strategies, in a sustainable manner.

WTC 2020 will feature multiple technical paper presentations, along with tunnelling training courses, poster presentations, the ITA-AITES General Assembly, technical visits to ongoing tunnelling projects in Malaysia, and interesting exhibitions and shows by companies from all over the world presenting their latest tunnelling solutions, innovations and technologies. Along with plenteous opportunities for networking, delegates will have many occasions to learn and share new and exciting developments, and socialise with colleagues and leading experts from all over the world and at the same time conclude successful commercial deals.

We invite you to experience our warm Malaysian hospitality and enjoy the multitude of entertainment, cultural, culinary and leisure activities offered in one of the world’s most vibrant and value for money shopping destination. You can always find the most updated information on www.wtc2020.my

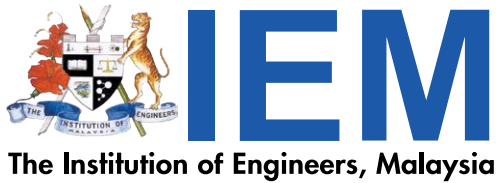
We look forward to welcoming you to Kuala Lumpur.

Best Wishes & Regards,

A handwritten signature in black ink, appearing to read 'Teik Aun Ooi', written in a cursive style.

Ir. Dr Teik Aun Ooi
Organising Chairman, WTC 2020

Message by Ir. David Lai Kong Phooi, IEM President ITA-AITES World Tunnel Congress 2020 (WTC 2020) and 46th General Assembly, Kuala Lumpur, Malaysia



The Institution of Engineers, Malaysia (IEM) has a clear goal in sight and that is to be an excellent and exceptional host of the World Tunnel Congress (WTC) and General Assembly of the International Tunnelling and Underground Space Association (ITA) in 2020.

WTC2020 will gather together a technical programme of leading international speakers, a delegation of high-level officials from various government authorities, private companies and other registered delegates from the engineering and construction industry, an exhibition of international service providers, and a vibrant group of young engineering undergraduates.

WTC2020 will also provide a learning platform for up-and-coming engineers. I am therefore particularly pleased to note that IEM has continued to support students, rising stars and graduates through discounted registration prices. We hope to continue to invest in the training and development of our young engineers, and to recognise that their attendance to an event such as this is an important part of their knowledge cache.

Despite the age of austerity in which we now live, governments throughout the world are still investing heavily in infrastructure, of which tunnels are an important component. With this demand comes the responsibility to undertake our designs and installations to a sufficient degree of skill and care. Our ultimate aim is that the knowledge we gain from WTC2020 and the interaction between the participants can help us improve our skills and enable us to deliver services and products with the requisite standard of care.

Ir. David Lai Kong Phooi
President
The Institution of Engineers, Malaysia

Welcome to Malaysia

“Selamat Datang Ke Malaysia” means Welcome to Malaysia

For over 600 years, Malaysia has occupied a special place in the heart of the business world. Sitting at the nexus of major trade routes, it has been enticing travellers to gather from Europe, the Middle East, Africa and every nation across Asia. Today, Malaysia enjoys an important market position, situated between two of the world's economic giants, i.e. India and China. It is a key player in the Association of Southeast Asian Nations (ASEAN), whose nations' population totalled more than 600 million. Along with India and China, this region makes up 45% of the world's population.

The country is now a role model for the developing world with a growing diversity of industry sectors, thanks to the government's Economic Transformation Programme whose goal is for Malaysia to achieve developed nation status by year 2020. Substantial investments in infrastructure, research, education and urban development have created a vibrant and dynamic economy. Key industry sectors include automotive, chemical, commerce & finance, education, electronics & electrical, furniture, infrastructure construction, 'halal' food product development, oil & gas, Islamic finance, medical science, palm oil, renewable energy, rubber, science, textile, timber and many more.

Malaysia is well-served by international airlines, modern airports, road and rail transportation as well as a first-class internet and telecommunications infrastructure that facilitate the conduct of businesses from all over the globe.

As one of the most vibrant countries in Southeast Asia, Malaysia offers many advantages as a world class destination. First and foremost, Malaysia is an easy place to stage international conventions since English is widely spoken yet it is multilingual. Malaysia is a multiracial country with mixtures of Malay, Chinese, Indian, Middle Eastern and Western cultures, thus it can cater well for a diversity of food, language and cultural needs.



Malaysia has a total of six international airports with the main travel hub being centred at the Kuala Lumpur International Airport (KLIA). Over 60 International airlines fly direct to Malaysia connecting 113 major cities from 35 countries, including Australia, the UK and the USA, making Malaysia easily accessible from anywhere in the world.

Flying Times from Malaysia



Kuala Lumpur International Airport (KLIA) won the World's Best Airport Immigration Service
SkyTrax 2013

Flights to Malaysia

List of Countries with Flights to Malaysia & Weekly Frequency

ASIA REGION				AFRICA				
Australia	Adelaide	11	India	Bangalore	16	Myanmar	Yangon	28
	Brisbane	7		Calcutta	7	Nepal	Kathmandu	28
	Darwin	4		Chennai	32	New Zealand	Auckland	6
	Gold Coast	7		Hyderabad	7	Pakistan	Karachi	1
	Melbourne	42		Kochi	14		Lahore	2
	Perth	24		Mumbai	12		Peshawar	2
	Sydney	35		New Delhi	14	Philippines	Cebu	4
Bangladesh	Dhaka	56	Indonesia	Tiruchirappalli	21		Kalibo	7
	Chittagong	2		Vishakhapatnam	3		Mabalacat	4
Brunei	Bandar Sri Begawan	32		Bali	77		Manila	60
Cambodia	Phnom Penh	28		Balik Papan	3	Singapore		309
	Siem Reap	11		Banda Aceh	7	South Korea	Seoul	21
China				Bandung	38		Busan	4
	Beijing	21		Batam/Batu Besar	4	Sri Lanka	Colombo	26
	Chengdu	7		Jakarta	156		Hambantota	1
	Chongqin	4		Lombok	7	Taiwan	Taipei	41
	Dalian	4		Makassar	4	Thailand	Bangkok	158
	Fuzhou	3		Medan	77		Chiangmai	14
	Guangzhou	56		Padang	14		Hat Yai	7
	Guilin	4		Palembang	7		Hua Hin	3
	Hangzhou	7		Pekan Baru	18		Koh Samui	12
	Hong Kong SAR	77		Semarang	4		Krabi	18
	Kunming	11		Solo City	3		Phuket	56
	Macau	17		Surabaya	47		Surat Thani	3
	Nanning	7		Yogyakarta	14	Uzbekistan	Tashkent	3
	Shanghai	32	Japan	Osaka	14	Kazakhstan	Almaty	3
	Shenzhen	14		Tokyo	25	Vietnam	Hanoi	24
	Tianjin	3					HCM City	67
	Xi'an	4	Jordan	Amman	3			
	Xiamen	8	Laos	Vientiane	4			
	Zhengzhou	4	Maldives	Male	9			
			Mauritius		3			

Congress Venue

Kuala Lumpur Convention Centre

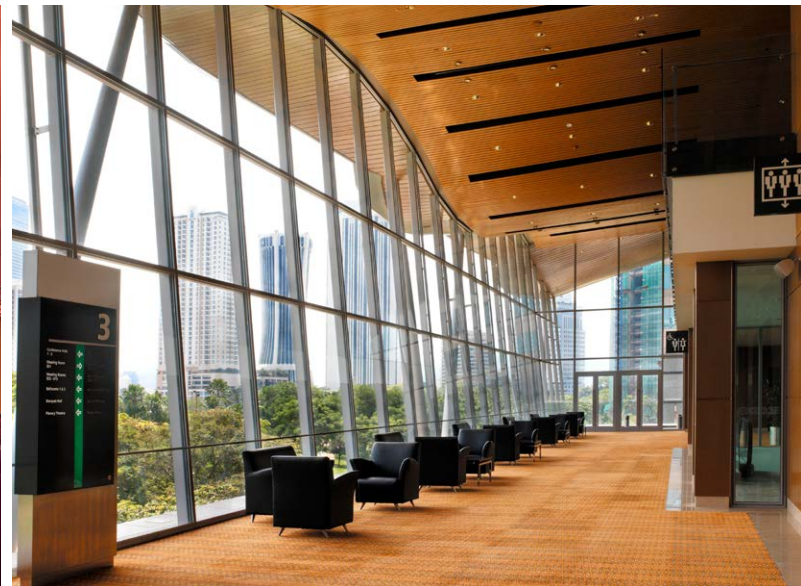
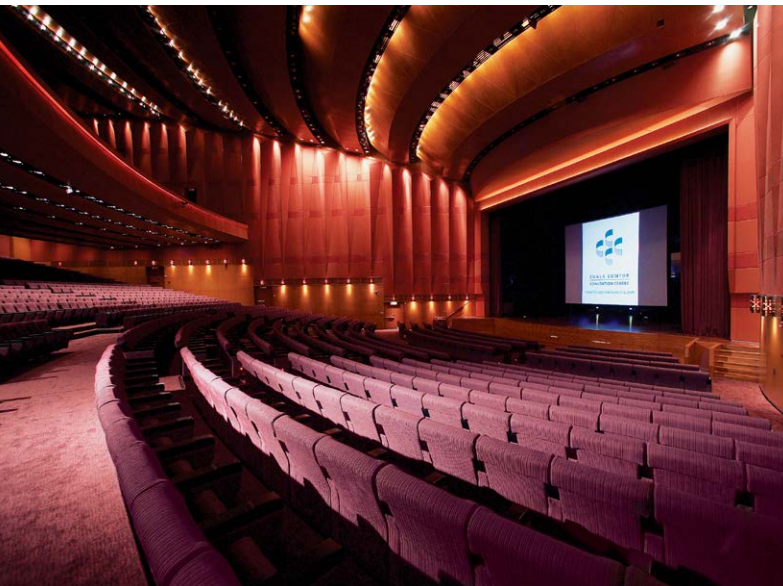
The International Association of Convention Centres (AIPC) Gold Standard Venue*

The Centre is strategically located in the heart of Malaysia's Iconic precinct in Kuala Lumpur. This unique "city within a city" precinct is a 100-acre development with the signature PETRONAS Twin Towers as the centrepiece. It offers spectacular surroundings, excellent connectivity, premier shopping, restaurants and an entertainment hub, and over 25,000 hotel rooms, all within walking distance from the Centre.



KUALA LUMPUR
CONVENTION CENTRE





World-Class Facilities

The architecture, tempered with traditional Malay creativity, sets the tone for the Centre's relaxed elegance. A perfect reflection of true Malaysian culture, warm, welcoming and friendly. The contemporary interior design makes the purpose-built, technologically advanced and well-maintained Kuala Lumpur Convention Centre the perfect venue to cater to anything and everything. From international, regional, and national conventions, tradeshows and consumer exhibitions, to meetings and events, entertainment and intimate private functions.

- AIPC Gold Standard Venue
- Purpose-Built
- Advanced Technology
- Multi-Purpose Space
- Renowned Culinary Distinction
- Strategic Location

Flexible Space

The purpose-built Centre provides 33,659 sqm of flexible space over five levels.

- Exhibition Halls 1 to 5 located on the ground level
- Halls 6 to 8 are located on level one, three and four
- The 2,991-seat Plenary Hall spans over level one and three
- The Conference and Banquet Halls, Ballrooms and Plenary Theatre are on level three; and the Meeting Rooms (301 to 310 and 401 to 410) are located over level three and four

Support Facilities

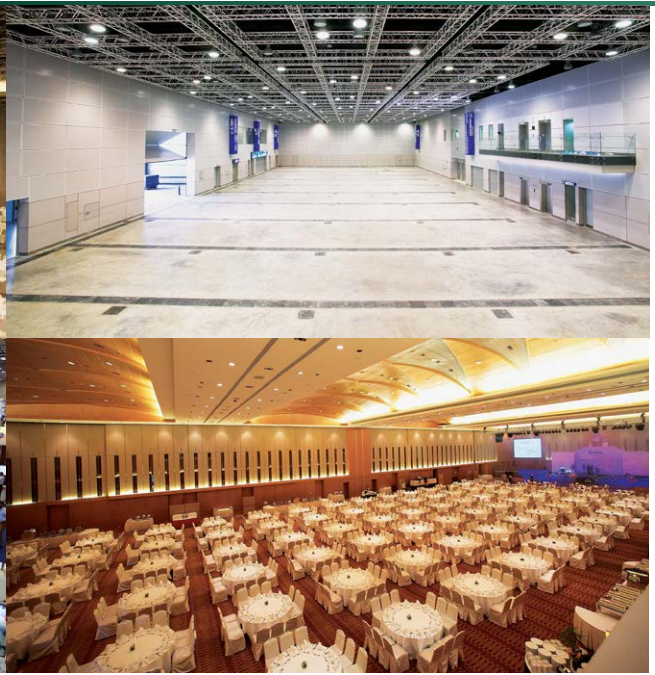
A variety of amenities support the meeting and function areas, providing specialist services for VIPs, media and speakers, as well as small committee meeting and organisers' office areas.

- Registration Counters
- VIP Suites – VVIP Suite, Executive Suites 1 to 4
- Business Centre
- Hospitality Lounges
- Organiser's Office Suites
- Medical Room
- Food and Beverage Outlets
- Disability Friendly
- Concierge
- Parenting Room

* ABOUT AIPC

AIPC represents a global network of more than 180 leading centres in 57 countries with the active involvement of over 900 management-level professionals worldwide. It is committed to encouraging and recognizing excellence in convention center management, based on the diverse experience and expertise of its international representation, and maintains a variety of educational, research, networking and standards programs to achieve this. AIPC also celebrates and promotes the essential role of the international meetings industry in supporting economic, academic and professional development and enhancing global relations amongst highly diverse business and cultural interests.





Culinary Distinction

The Centre's culinary philosophy is premised on personalised, customised and experiential delivery. With Malaysia's largest commercial kitchen of 3,157 sqm and 52 award-winning chefs, it has earned its distinctive global reputation for innovation, 5-star banqueting and a creative mindset to deliver differentiated dining.



"I was impressed by the high standard of the Kuala Lumpur Convention Centre's facilities and the excellent level of service delivered by the team throughout the IPBES Fourth Plenary session. I was warmly welcomed every day and the food was outstanding and absolutely delicious, especially the cookies! I would like to express my gratitude to all the wonderful staff that made my stay so pleasant and I look forward to attending another event at the Centre in future."

Ms Carmel Mbizvo
 Head of Branch: Biodiversity
 Science and Policy Advice
 South African National
 Biodiversity Institute




Hotel Accommodations

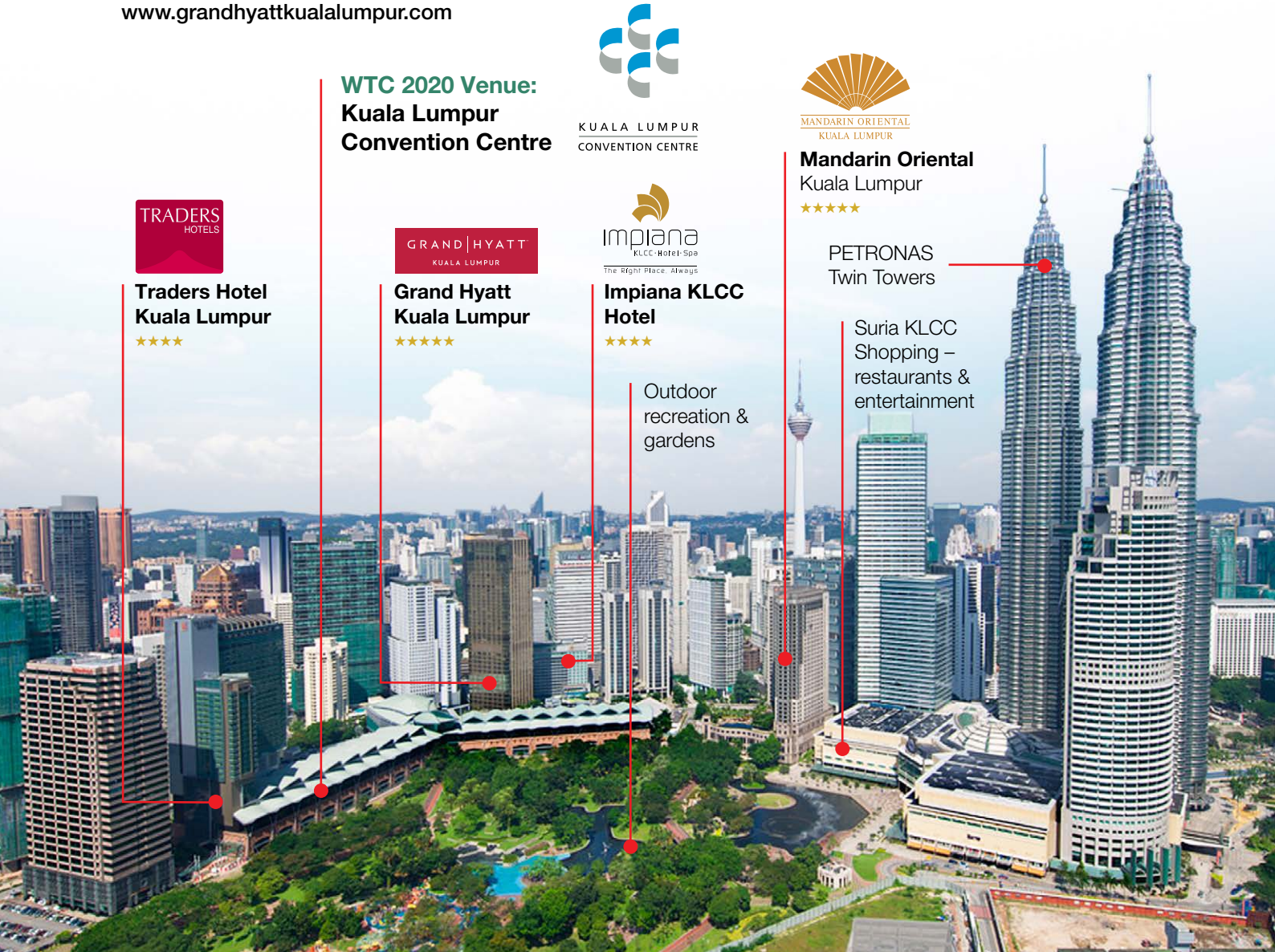
Kuala Lumpur offers a variety of accommodation, from leading international brands, to boutique and budget hotels. This variety of accommodation is conveniently located in the vicinity of the KLCC precinct, offering a remarkably high level of comfort, sophisticated facilities and unparalleled service, coupled with great value.

The Centre has four on-site hotels; the Grand Hyatt, Impiana KLCC, Mandarin Oriental and Traders Hotel. Within a 10 minute walking distance there are over 25,000 hotel rooms available.

WTC 2020 Official Hotel

Hotel	Star Rating	Room Rates (MYR)			Distance Hotel / KLCC
		Rooms Category/ies	Single Room	Double Room	
	★★★★★	Grand Room (City View)	MYR 630.00++	MYR 690.00++	Adjacent to the Convention Centre

12 Jalan Pinang, 50450 Kuala Lumpur, Malaysia
www.grandhyattkualalumpur.com



Traders Hotel Kuala Lumpur
★★★★



Grand Hyatt Kuala Lumpur
★★★★★



KUALA LUMPUR CONVENTION CENTRE



Impiana KLCC Hotel
★★★★

Outdoor recreation & gardens

















MANDARIN ORIENTAL KUALA LUMPUR

Mandarin Oriental Kuala Lumpur
★★★★★

PETRONAS Twin Towers

Suria KLCC Shopping – restaurants & entertainment

Hotel Accommodations (Continued)

Hotel	Star Rating	Room Rates (MYR)			Distance Hotel / KLCC
		Rooms Category/ies	Single Room	Double Room	
	★★★★★	Deluxe Room Deluxe Garden View Deluxe Twin Towers View Traders Club Room Traders Club Twin Towers View	MYR 613.20 nett MYR 659.60 nett MYR 694.40 nett MYR 752.40 nett MYR 833.60 nett	MYR 659.60 nett MYR 706.00 nett MYR 740.80 nett MYR 798.80 nett MYR 880.00 nett	Integrated with the Convention Centre
	★★★★★	Deluxe City View	MYR 690.20 nett	MYR 759.80 nett	Adjacent to the Convention Centre
	★★★★★	Deluxe Club	MYR 450.00 nett MYR 550.00 nett	MYR 480.00 nett MYR 580.00 nett	Opposite the Convention Centre
	★★★★★	Superior Room Deluxe Room	MYR 455.80 nett MYR 551.20 nett	MYR 498.20 nett MYR 593.60 nett	10-minute walk
	★★★★★	Banyan Retreat	MYR 790.00++	MYR 860.00++	4.2 km
	★★★★★	City Oasis	MYR 460.00++	MYR 520.00++	3.1 km
	★★★★★	–	MYR 655.00	MYR 735.00	300 m walk
	★★★★★	–	MYR 320.00++	MYR 340.00++	10-minute
	★★★★★	Deluxe Premier	MYR 500.00++ MYR 550.00++	– –	10-minute walk
	★★★★★	Deluxe	As per prevailing BAR rate	As per prevailing BAR rate	350 m walk
	★★★★★	Deluxe	MYR 522.00 net	MYR 562.60 net	10-minute by taxi
	★★★★★	Deluxe Executive Studio Junior Suite	MYR 195.00 nett MYR 230.00 nett MYR 350.00 nett MYR 400.00 nett	MYR 195.00 nett MYR 230.00 nett MYR 350.00 nett MYR 400.00 nett	1.1 km (5-minute drive)
	★★★★★	Deluxe Deluxe Room Deluxe Room Junior Suites Grand Suites Premier Suites	MYR 340.00++ MYR 370.00++ MYR 400.00++ MYR 550.00++ MYR 700.00++ MYR 850.00++	Room Only 1 Breakfast 2 Breakfast 1 or 2 Breakfast 1 or 2 Breakfast 1 or 2 Breakfast	5.1 km 10-minute by Light Rail Transit (LRT)
	★★★★★	Deluxe Premier Room Premier Exec	MYR 350.00nett – Room	MYR 350.00nett MYR 430.00nett MYR 480.00nett	10-minute walk
	★★★★★	Studio Junior Suite Deluxe Suite	MYR 318.00nett MYR 349.80nett MYR 381.60nett	MYR 349.80nett MYR 381.60nett MYR 413.40nett	5-minute walk

* Room rate quoted in 2019 for reference purpose and it is subject to change.

* ++ is referring to 6% Sales and Service Tax (SST) and 10% Service Charge.

* Exchange Rate: USD 1.00 = MYR 4.10 based on Published rate from National Bank of Malaysia in March 2019.

Programme Outline

The dates for WTC 2020 in Kuala Lumpur are Friday 15th – Thursday 21st May 2020. The proposed scheduled dates fall during the month of Ramadan which is the holiest month in the Islamic calendar. Participants will have the opportunity to experience the 'Buka Puasa' (Breaking of Fast) in Malaysia.

Time Date	08:00 to 09:00	09:00 to 10:00	10:00 to 11:00	11:00 to 12:00	12:00 to 13:00	13:00 to 14:00	14:00 to 15:00	15:00 to 16:00	16:00 to 17:00	17:00 to 18:00	18:00 to 19:00	19:00 to 20:00	20:00 to 21:00	21:00 to 22:00	22:00 to 23:00
15 May 2020 Friday	ITACET Training Course "INNOVATIONS IN TUNNELLING – Geotechnical Engineering and Project Management"														
16 May 2020 Saturday	ITACET Training Course														
	Registration														
17 May 2020 Sunday	Registration										Congress Welcome Reception (registered participants only)				
	General Assembly				Lunch	Working Group Meetings									
18 May 2020 Monday	Registration														
	Opening Ceremony		Muir Wood & Keynote Lectures		Lunch	Exhibition									
19 May 2020 Tuesday	Registration														
		Exhibition									'Buka Puasa' Dinner (prepaid registered participants only)				
	Open Session				Lunch	Techical Sessions		ITA Committee Meetings							
20 May 2020 Wednesday	Registration														
		Exhibition									Gala Dinner (prepaid registered participants only)				
	Technical Sessions				Lunch	Techical Sessions	General Assembly	Closing Ceremony							
21 May 2020 Thursday	Post Congress Technical Tours														

ITACET Training Course

“INNOVATIONS IN TUNNELLING – Geotechnical Engineering and Project Management”

Day 1 (Friday, 15 May 2020)

Session 1: Platform - Innovations in Tunnelling

	08:00 – 09:00	:	Registration
S1.1	09:00 – 09:15	:	Welcome and Opening
S1.2	09:15 – 10:00	:	Underground Infrastructure impacting Economy
S1.3	10:00 – 10:30	:	Infrastructure Funding Sources
	10:30 – 11:00	:	<i>Networking and coffee break</i>
S1.4	11:00 – 11:30	:	Innovations – Challenging the Environment
S1.5	11:30 – 12:00	:	Financing Infrastructures – Managing Risks of Innovations
S1.6	12:00 – 12:30	:	Questions, Answers, Conclusions
	12:30 – 14:00	:	<i>Networking and lunch break</i>

Session 2: Megaprojects – Innovations in Design & Construction

S2.1	14.00 – 14.45	:	Types of Excavations and Support
S2.2	14:45 – 15:30	:	Construction Methods under Airports
	15:30 – 16:00	:	<i>Networking and coffee break</i>
S2.3	16:00 – 16:45	:	Innovations in Conventional Tunnelling
S2.4	16:45 – 17:30	:	Innovations in Mechanized Tunnelling
	17:30 – 18:00	:	Summary and Conclusions

Day 2 (Saturday, 16 May 2020)

Session 3: Contract Management of Underground Structures

	08:00 – 09:00	:	Registration
S3.1	09:00 – 09:45	:	Procurement Methods
S3.2	09:45 – 10:30	:	Risk Management in Design
	10:30 – 11:00	:	<i>Networking and coffee break</i>

Session 4: Geotechnical Monitoring & Instrumentation

S4.1	11:00 – 11:20	:	Site Investigation & Geotechnical Baselines
S4.2	11:20 – 11:50	:	Geotechnical Instrumentation, Monitoring & Interpretation
S4.3	11:50 – 12:30	:	Questions, Answers, Conclusions
	12:30 – 14:00	:	<i>Networking and lunch break</i>

Session 5: Case Histories

S5.1	14.00 – 14.30	:	TBM Innovations
S5.2	14.30 – 15.15	:	Flood Control Tunnels (e.g.KL's SMART, BKK 2011 Flood)
	15.15 – 15.45	:	<i>Networking and coffee break</i>
S5.3	16:00 – 16:45	:	Mass Transit Tunnels – Bangkok, KL, Singapore
	16:45 – 17:00	:	Questions & Answers
	17:00 – 18:00	:	Summary and Conclusions

Committee

Executive Organising Committee

Organising Chairman

- Ir. Dr Teik Aun Ooi

Co-Organising Chairman

- Olivier Vion

Deputy Organising Chairman

- Ir. Chee Min Khoo

Committee Members

- Ir. Sang Woh Ong
- Ir. Chi Koong Chong
- Dr Rini Asnida Abdullah
- Ir. Frankie Peng Leong Cheah
- Ir. Boon Kheng Neo
- Ir. Dr Swee Huat Chan
- Ir. Dr Hong Kok Wang
- Ir Dr Yean Guan Tan
- Ir. Thien Seng Yee
- Dr Bhavani Krishna Iyer
- Ir. Khoon Khean Chia
- Ir. Tuan Haji Mohd Ali Yusoff
- Ir. Boo Soon Ong
- Mr. Chee Kien Lee
- Ir. Sofiana Balkhis Talha
- Pn. Najiha Nadzru
- Ir. Dr Mohd Farid Ahmad
- Ir. Soon Hoe Yap
- Ir. Hjh. Raftah Mahfar
- Ir. Ellias Saldin
- Ir. Teong Sian Yam
- Ir. Peng Tean Sin
- Mr. Ming Hwei Ang
- Ir. Dr Chia Weng Boon
- Mr. Wooi Chuan Loh



Advisory Committee

International

• Dr Harald Wagner	–	Chairman
• Dawoud Al Hajri	–	ITA President/Chair WTC2018
• Renato Casale	–	ITA President/Chair WTC2019
• Teik Aun Ooi	–	ITA President/Chair WTC2020
• Prof. Tarcisio B. Celestino	–	ITA President/Chair WTC2014
• Prof. Jenny (Jinxu) Yan	–	ITA Vice President
• Olivier Vion	–	ITA Executive Director
• Claude Berenguier	–	ITACET Executive Director
• Zaw Zaw Aye	–	ITA Myanmar
• Leslie Pakianathan	–	ITA Singapore
• Ow Chun Nam	–	TUCSS Past President
• Kulaindran Ariaratnam	–	TUCSS Past President
• Jeyatharan Kumarasamy	–	TUCSS President
• Dr Aphichat Sramoon	–	TUTG President
• Randy Essex	–	ITA USA
• Abidemi Agwor	–	ITA Nigeria
• Dr Suchatvee Vince	–	Chair WTC2012
• Suwansawat	–	–
• Felix Amberg	–	Chair WTC2013
• Dr Davorin Kolic	–	Chair WTC2015
• Michael Smithson	–	Chair WTC2016
• Heidi Berg	–	Chair WTC2017

National

• YBhg. Dato' Nor Hisham bin Ahmad Dahlan	–	Mayor, DBKL
• Dato' Ir. Haji Md. Nasir bin Md. Noh	–	DG, JPS
• Dato' Ir. Dr Zullkefle bin Nordin	–	DG, JPP
• YBhg. Dato' Sr. Aziz Bin Abdullah	–	DG, LLM
• Ir. David Lai Kong Phooi	–	President, IEM
• Dato' Ir. Ahmad 'Asri bin Abdul Hamid	–	CEO, CIDB
• Dato' Ir. Hj. Azman bin Mohd	–	CEO, TNB
• Dato' Mohd Azharuddin bin Mat Sah	–	CEO, SPAD
• Datuk Mohamed Hazlan Mohamed Hussain	–	President, Prasarana
• Dato' Sri Shahril Mokhtar	–	CEO, MRT Corp
• Dato' Mohd Nur Ismal bin Mohamed Kamal	–	CEO, MyHSR Corp
• Datuk Zulkefli bin Hj. Sharif	–	CEO, MyCEB
• Dato' Ir. Paul Ha	–	Deputy GMD, MMC-Gamuda
• Dato' Ir. Zohari Sulaiman	–	CEO, Prasarana Praise
• Mr. Blaise Mark Pearce	–	MRT Corp
• En. Muhammad Zulqarnain Ismail	–	MRT Corp



Scientific Committee

• Prof. Lord Robert Mair	–		United Kingdom
• Vacant	–		United Kingdom
• Prof. Dr Yoo Chungsik	–		South Korea (Chairman)
• Prof. In Mo-Lee	–		South Korea
• Prof. Dr Yun Bai	–		China
• Prof. Jenny (Jinxu) Yan	–		China
• Prof Charles Wang Wai Ng	–		Hong Kong
• Prof. Kwet Yew Yong	–		Singapore
• Assoc. Prof. (Adj) Dr. Zhou Ying Xin	–		Singapore
• Prof. Dr Noppadol Phien-wej	–		Thailand
• Prof. Dr Quang Phich Nguyen	–		Vietnam
• Assoc. Prof. Ir. Dr Hisham b. Mohamad	–		Malaysia
• Er. Poh Seng Tiok	–		Malaysia
• Dato' Ir. Paul Ha	–		Malaysia
• Ir. Dr Ooi Lean Hock	–		Malaysia
• Prof. Dr Toshihisa Adachi	–		Japan
• Yoshikazu Ota	–		Japan
• Prof. Dr Zhao Jian	–		Australia
• Alexandre Gomes	–		Australia
• Prof. Jamal Rostami	–		USA
• Randall J. Essex	–		USA
• Prof. Tarcisio Celestino	–		Brazil
• Prof. Dr Markus Thewes	–		Germany
• Tim Babendererde	–		Germany
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• Felix Amberg	–		Switzerland
• Gustaz Klados	–		Hungary
• Dr Davorin Kolic	–		Croatia
• Prof. Nuh Bilgin	–		Turkey
• Prof. Saffet Yagiz	–		Kazakhstan
• Chhatra Basnet	–		Nepal
• Dr. Bassam AL Ghulman	–		United Arab Emirates
• Prof. T. Ramamurthy	–		India

Sponsorship Opportunities

Sponsorship Packages

PLATINUM Sponsorship

Package A MYR 530,000

- Exhibition booth x 6 units
- Gala dinner x 6 pax
- Full registration x 20 pax
- Corporate video 3 min
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

Package B MYR 318,000

- Exhibition booth x 4 units
- Gala dinner x 4 pax
- Full registration x 16 pax
- Corporate video 2 min
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

Package C MYR 212,000

- Exhibition booth x 4 units
- Gala dinner x 3 pax
- Full registration x 12 pax
- Corporate video 1 min
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

GOLD Sponsorship

MYR 106,000

- Exhibition booth x 2 units
- Gala dinner x 2 pax
- Full registration x 4 pax
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

SILVER Sponsorship

MYR 42,400

- Exhibition booth x 1 unit
- Gala dinner x 2 pax
- Full registration x 2 pax
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

BRONZE Sponsorship

MYR 26,500

- Gala dinner x 1 pax
- Product related insert
- Inside full page advertisement
- High visibility of sponsor logo throughout the congress

Note - All the above rates are inclusive of 6% Sales and Service Tax (SST).

Please download the Sponsorship Prospectus from www.wtc2020.my and discover the wide variety of opportunities. Please contact us to discuss sponsorship packages tailored to feed your needs.

Please note that for some sponsor packages/ items the availability is limited and booking will be on a "first come, first serve" basis.



Other Sponsorship Opportunities

S/N	Items Particulars	MYR
1.	Gala Dinner	MYR 212,000
2.	Welcome Reception	MYR 106,000
3.	Standing Lunch <i>(one sponsor per day)</i>	MYR 106,000
4.	Buka Puasa Dinner <i>(one sponsor per day)</i>	MYR 159,000
5.	Conference Bag <i>(exclusive sponsorship)</i>	MYR 530,000
6.	WTC 2020 16GB Pendrive <i>(exclusive sponsorship)</i>	MYR 318,000
7.	Lanyard 3 sponsors @ <i>(each)</i>	MYR 74,200
8.	One unit of Exhibition Booth <i>(3mx3m Shell Scheme)</i>	MYR 503,800
9.	Mobile Apps Sponsorship	MYR 53,000
10.	Name Tag Sponsor @ <i>(each)</i>	MYR 53,000
11.	Poster Session Area @ <i>(each)</i>	MYR 10,600
12.	Table Top Sponsorship @ <i>(each)</i>	MYR 10,600
13.	Advertisements in Programme Books	Refer to the Secretariat
	• Inside Front Cover Page	MYR 10,600
	• Outside Back Cover Page	MYR 10,600
	• Inside Back Cover Page	MYR 8,480
	• Intermediate Full Page	MYR 3,180
	• Intermediate Half Page	MYR 2,120

Note - All the above rates are inclusive of 6% Sales and Service Tax (SST).

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Please note that for some sponsor packages/ items the availability is limited and booking will be on a “first come, first serve” basis.



Exhibition Opportunities

WTC 2020 will gather public managers, designers, contractors, equipment suppliers, engineering service companies, professors, professionals and students. There will be space and opportunity for the interchange of technical information, for the new products and services divulgation and for the creation and strengthening of relations among the participants. Everything related to tunnelling will be the focus. Currently Kuala Lumpur offers several businesses and technology exchange opportunities.



On behalf of the Organizing Committee of the WTC 2020, we hereby offer your company to participate at this congress as it will be an excellent opportunity to expose your company brand and products. By offering an effective marked place for your company and its products, the Organizing Committee will do their utmost to ensure that your investment at the WTC 2020 will be as fruitful as possible. Exhibitors will be given excellent opportunities to present company name and products during the congress. Coffee breaks will take place in the Exhibition Hall. This will offer excellent opportunities for participant interaction in a modern setting.

If you are interested in becoming an exhibitor, please send an e-mail ASAP to wtc2020@iem.org.my

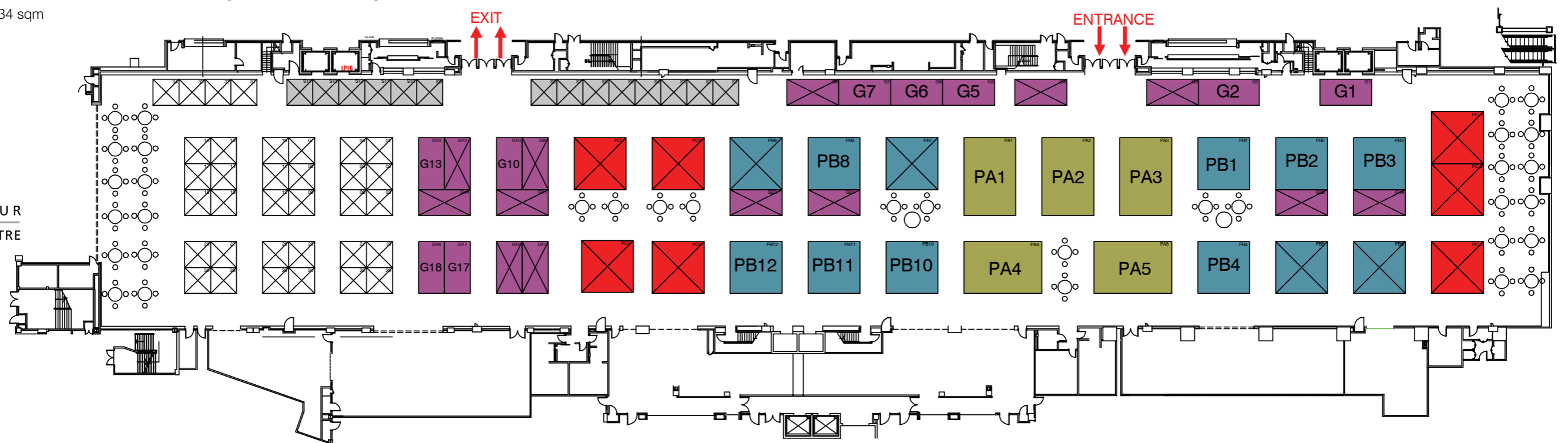
Exhibition space will be allocated on a first come, first served basis.



World Tunnel Congress 2020 Exhibition Floor Plan

Kuala Lumpur Convention Centre (Hall 1 & Hall 2)

Gross Area : 4834 sqm



Exhibition Booths

- | | |
|--|--|
| Platinum A (6 Booths) | Gold (2 Booths) |
| Platinum B (4 Booths) | Silver (1 Booth) |
| Platinum C (4 Booths) | X Reserved |

Notes: * Reservation based on "First Come First Serve" Basis.
 * Please refer to WTC2020 Secretariat for the latest exhibition layout.

Abstracts and Papers

Theme of Congress

The theme of the WTC 2020 is **Innovation and Sustainable Underground Serving Global Connectivity**. The theme has conscientiously been chosen to timely reflect the innovative achievements in the efforts of the ITA-AITES in promoting the use of tunnels and underground space for the benefits of public, environment and sustainable development for the past of almost half a century since its establishment in 1974.

Session Topics

Growing numbers of underground innovations claimed to hold the key to unlock the door to a 'smarter urban connectivity'. More often than not, these innovations were being embedded into highly complex underground projects that aim to minimise environmental hazards, to save energy, to increase the functional diversity of the urban structure, to reduce the need of local transportation, to make services more easily accessible to residents, and to protect the urban landscape as well as culture for sustainable urban development.

This Congress aims at providing a forum for practising professionals – engineers, consultants, contractors, technologists, researchers, academicians, manufacturers and suppliers to share their experiences, research, studies and views so as to contribute to the advancement of Innovation and Sustainable Underground Serving Global Connectivity. A wide range of high quality scientific and technical papers of international or regional significance on tunnelling and underground space development is expected on, but not limited to, the following topics.

1. Innovation in tunnels and tunnelling technology
2. Innovation in rock support and water proofing technology
3. Sustainable and strategic use of underground space
4. Environment sustainability in underground construction
5. Urban dewatering and flood control with underground tunnels
6. Planning, design and construction of tunnels and underground structures
7. Risk, health and safety, contractual practices and project management of underground construction
8. Instrumentation and monitoring in underground construction
9. Conventional tunnelling, sprayed concrete use, drill and blast excavation
10. Mechanised tunnelling and excavation (hard rock, soft rock and soil)
11. Site investigation and ground characterisation
12. Geological and geotechnical aspects in underground construction
13. Stability assessment and ground stabilisation in underground construction
14. Operation, repair and maintenance of tunnels and underground structures
15. Design and installation of mechanical and electrical systems for underground structures
16. Information modelling in tunnelling and underground space development
17. Projects and case histories
18. Others (e.g. economics of tunnels and use of underground space, life cycle asset management, etc.)

Important Dates

The Organising Committee of the WTC 2020 cordially invites you to submit abstract(s) of not more than 200 words for the Congress.

- Call for papers : 01 January 2018
- Submission of abstracts : Not later than 31 May 2019
- Acceptance of abstracts : 30 June 2019
- Submission of papers : Not later than 30 September 2019
- Acceptance of papers : 30 November 2019
- Notification to speakers : 15 January 2020

The Congress language shall be English.

Authors of selected papers will be invited to submit upgraded versions of their papers for publication as full journal papers in Geotechnical Engineering Journal of the SEAGS & AGSSEA, which is an EI, ESCI and Scopus indexed journal.

Site Visits and Technical Tours

Site visits and technical tours will be held during the congress to the following engineering attractions and live construction projects that will be ongoing. Roundtrip transportation will be provided and limited seats are available.

Monday (18 May 2020)

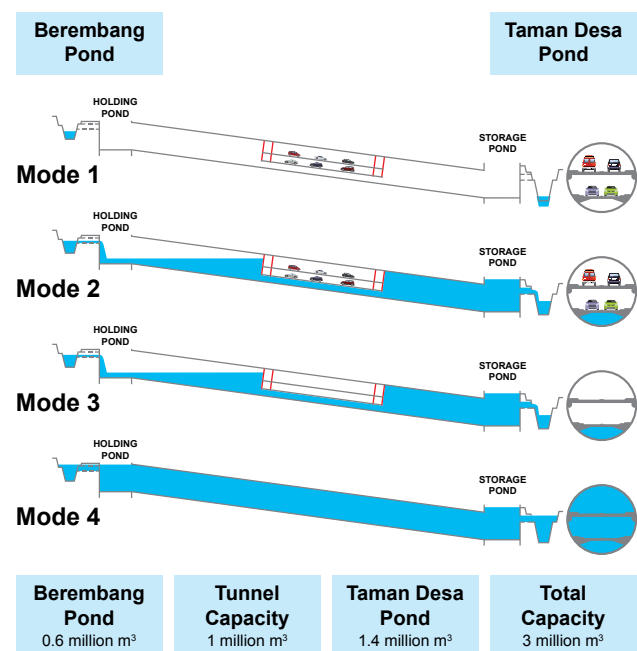
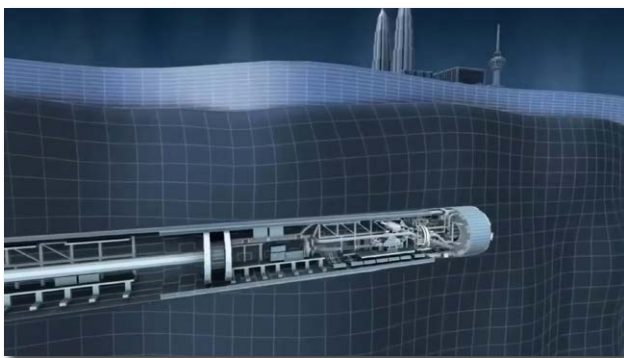
SMART Tunnel

- Group 1 : Depart from KLCC to SMART – 14:00. Back to KLCC at 16:00**
- Group 2 : Depart from KLCC to SMART – 16:00. Back to KLCC at 18:00**
- Total Capacity: 80 pax (40 pax / 1 bus per group)**

Brief: The SMART project provides a storm water diversion scheme including flood-water storage reservoir and a 9.7-km long, 11.8-m diameter bypass tunnel, sufficient to save the Kuala Lumpur city from flooding at the time of inclement weather in the foreseeable future. With no major flood events over most of the years after completion of SMART, the dual-purpose tunnel was engineered, with a waterway beneath the double-deck motorway built into the central 3km section, relieving traffic congestion by providing 2x2 traffic lanes for cars connecting the city centre to the southern gateway, the KL-Seremban Highway.

The visit will be an excellent opportunity for the congress participants to understand the concept and philosophy behind flood mitigation via SMART Tunnel. A video presentation will be included in the programme to showcase the project planning, construction, engineering innovation and latest technologies in tunnel construction and followed by soft part of the operation (i.e. challenges and limitation) as well as public and government related issues.

Cross-Sectional View of the SMART Tunnel



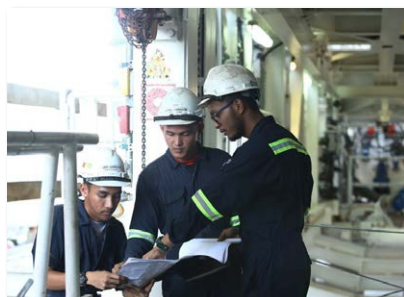
Site Visits and Technical Tours (Continued)

Tuesday (19 May 2020)

Tunnelling Training Academy

- Group 1** : Depart from KLCC to TTA – 14:00. Back to KLCC at 16:00
Group 2 : Depart from KLCC to TTA – 16:00. Back to KLCC at 18:00
Total Capacity : 80 pax (40 pax / 1 bus per group)

Brief: The Tunnelling Training Academy (TTA) is the only facility in Malaysia dedicated to training workers in all processes concerned with safe high-technology tunnelling. Its curriculum is driven by the needs of the local industry to undertake major tunnelling works in the Klang Valley Mass Rapid Transit project and the vast building houses an unrivalled range of specialist plant and equipment. Visits will be arranged for demonstration, talks and a tour of the facilities.



Site Visits and Technical Tours (Continued)

Wednesday (20 May 2020)

KVMRT Line 2 & Line 3 Underground Works

Group 1 : Depart from KLCC to Site – 10:00. Back to KLCC at 13:00

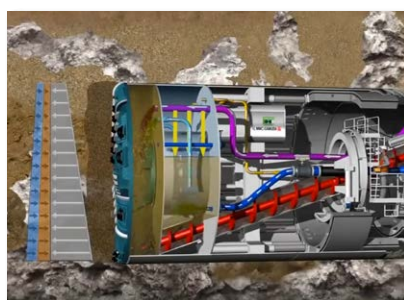
Group 2 : Depart from KLCC to Site – 14:00. Back to KLCC at 17:00

Total Capacity: 80 pax (40 pax / 1 bus per group)

Brief: The Klang Valley MRT Line 2 is due to open in 2021/ 2022 and so the tunnel and underground station construction will be well underway in 2020. This will allow unprecedented access into a brand new piece of underground infrastructure to experience the quality of architectural design, the complexity of tunnelling works in both SCL and TBM construction and the integration with top side developments. Construction of MRT Line 3 is expected to commence by the time.

The Variable Density Tunnel Boring Machine (VD-TBM), the first-of-its-kind expressly for the Klang Valley MRT Project in collaboration between Herrenknecht and the tunnelling contractor MMC-Gamuda, has been specifically designed for coping with the specific challenges presented by Kuala Lumpur’s extreme karstic limestone geology.

This tour will visit a number of construction sites within the Greater Kuala Lumpur area to view the tunnelling work, station construction work and visitor centre.



Site Visits and Technical Tours (Continued)

Thursday (21 May 2020)

Tour to East Coast Rail Link & Pahang-Selangor Water Transfer Tunnel

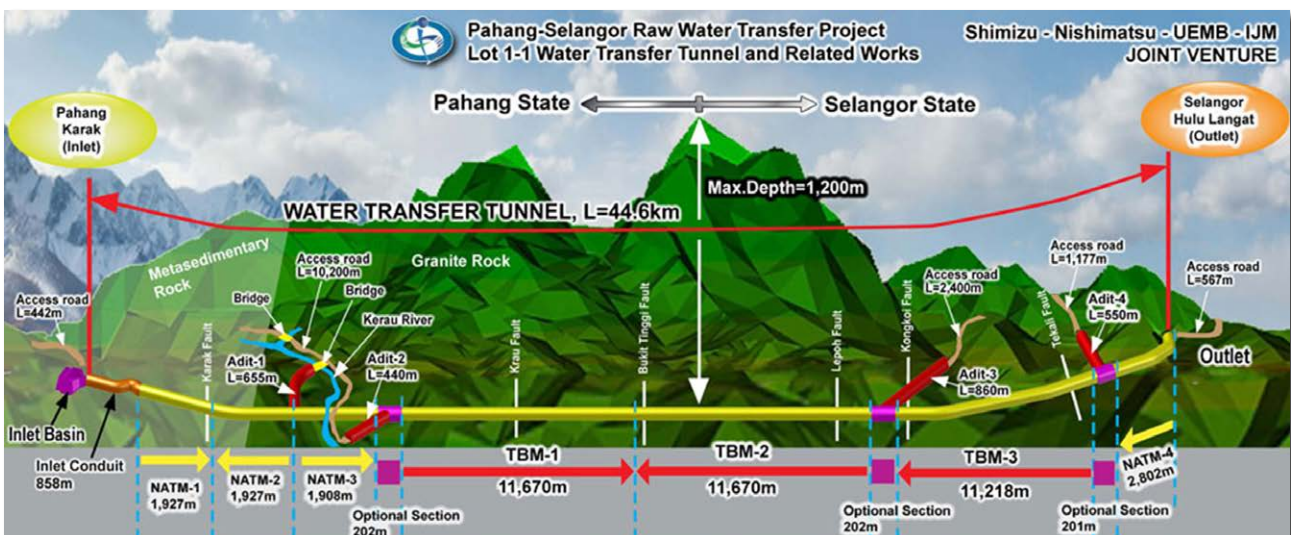
Total Capacity : 40 pax



Brief: To unlock the potential growth of the East Coast Economic Region (ECER), the East Coast Rail Link (ECRL) has been identified as a key enabler for the east coast region (Kelantan, Terengganu and Pahang states) that can connect economic centres including industrial areas and provide a link to Greater Kuala Lumpur/Klang Valley efficiently. ECRL is a high impact infrastructure project that will form the backbone of ECER's multimodal transport infrastructure in complementing existing road/expressway infrastructure and KTMB East Coast Line and ports. A total of 688km railway (including approximate 80km connecting ITT Gombak to Port Klang), involves construction of total 49km long tunnel at 19 different locations with the longest 17.9km tunnelling at Bukit Tinggi – Gombak crossing the Titiwangsa mountain range.



The Pahang – Selangor raw water transfer tunnel is one of the longest and biggest tunnels in Southeast Asia and the sixth longest in the world – a 44.6km long, 5.2m in diameter tunnel with a water delivery capacity of 1.89 billion litres per day, laid underneath a mountain range between Pahang and Selangor states. This huge excavation project was successfully completed overcoming the various challenges (e.g. over 50m high empty cavern inside a mountain, pressurized spring water that shot up as much as 24.6tons of water per minute, rock burst, etc.).



Discover Kuala Lumpur & Malaysia Excursions & Accompanying Persons' Programme

Malaysia's diverse and easily accessible attractions have made it a popular choice for delegates and their accompanying persons. Visiting delegates have an array of options pre and post meeting, such as late night shopping excursions or unique cultural experiences. From idyllic tropical islands, to ancient rainforest teeming with flora and fauna, to world heritage sites, there is no shortage of venues to choose from.



Spouse Programme

KL Hop-On Hop-Off City Tour Bus Kuala Lumpur

18th May 2020 (Monday)



Discover Kuala Lumpur's major landmarks on an air conditioned double decker with an open top deck. KL Hop-On Hop-Off is a free and easy city tour that has 23 stops which cover more than 70 attractions. The interval between buses is around 20 to 30 minutes. Make the most of your trip and hop on and off at any time. Visit only the attractions you want to see along the bus route for maximum flexibility.

Learn about the history and culture of Malaysia as you tour through the city with English audio commentary. All buses also provide commentary in a choice of nine different languages and a friendly customer service officer assists guests while on the bus.



Spause Programme (Continued)

Royal Selangor School of Hard Knocks

ROYAL SELANGOR

school of
**hard
 knocks**

19th May 2020 (Tuesday)

You will be taken for a tour of the Pewter Gallery which offers a host of interactive displays and fascinating exhibits. From the gallery, we continue with the highlight of the tour, the School of Hard Knocks. Using just a few simple tools (hammer, wooden mould, scraper), make a pewter dish personalized with your initials or message that you wish to engrave onto the dish.



Step by step, the experienced pewter smith will guide you through the simple process of forming, scraping, polishing and packing. The finished dish is for you to keep along with an apron to complete the moment. A personalized certificate will be presented to you to attest to your newfound skills.



Cooking Experience – Malaysian Favourite Dish

20th May 2020 (Wednesday)

Take the rare hands-on experience in a Malaysian home environment using traditional stone and wooden utensils in a modern kitchen. You will spend some moderate time at the local market and cook using fresh ingredients bought from site.

You don't have to bring anything except a generous dose of enthusiasm, a genuine love for food and a pair of comfortable shoes. All ingredients, equipment and recipes will be provided, even the aprons.

You don't have to bring anything except a generous dose of enthusiasm, a genuine love for food and a pair of comfortable shoes. All ingredients, equipment and recipes will be provided, even the aprons.

The chef will be at hand to help out, demonstrate special techniques or pass on a useful tip or two. Class ends with a sit-down meal of the dishes prepared.



Pre-Congress Tour

Tour 1: 3 Days 2 Nights – Cameron Highlands

Cameron Highlands is nestled between the towering mountains of the Grand Titiwangsa Range and is well known for its charming scenery, flora, fauna and its agricultural produce. The tranquil sound of nature, serene landscapes and cool climate of Cameron Highlands mesmerizes and leaves special experience upon the multitudes of visitors to this green haven.

Hidden amongst the clouds and its green mountains is a complex Rainforest ecosystem with the wonders of nature that has been long held with fascination by researchers and environmentalists. Cameron Highlands has a rich biodiversity inhabited by a wide variety of flora and fauna endemic to the Montane Rainforest.



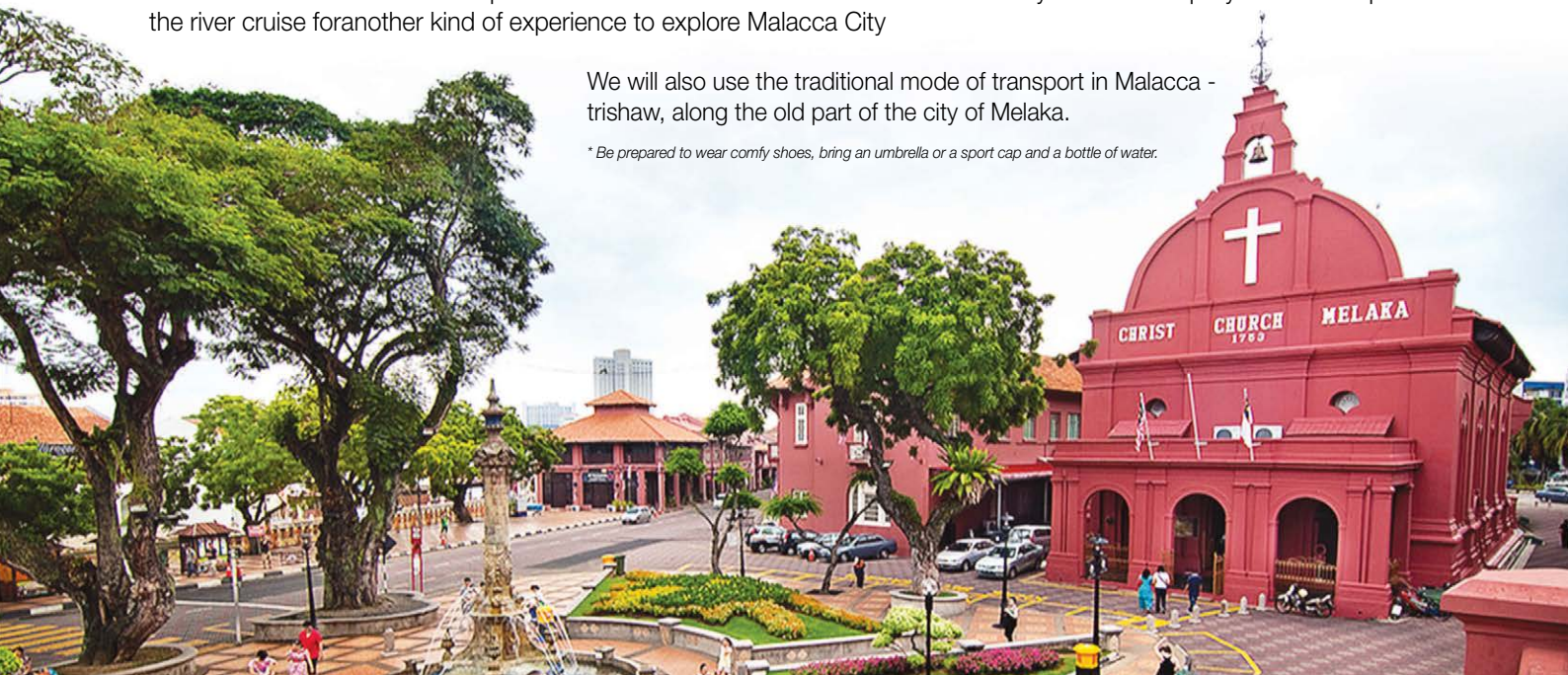
Tour 2: Full Day or 2 Days 1 Night – Malacca Historical City

Founded in 1403, the Sultanate of Malacca was once the greatest and most powerful empire and seaport in South East Asia. The Portuguese, Dutch and British ruled over Malacca's silk and spice trade. This rich heritage is evident today in a unique mix of architectural styles. Visit the typical Malay House, the Cheng Hoon Teng Temple (@ Harmony Street), the oldest Chinese temple in Malaysia, the Dutch Stadhuis and walk through the ruins of St Paul's Church where St Francis Xavier was once buried.

Malacca is also one of the birthplaces of the 'Babas' - a mix of Chinese and Malay cultures uniquely its own. Hop on the river cruise for another kind of experience to explore Malacca City

We will also use the traditional mode of transport in Malacca - trishaw, along the old part of the city of Melaka.

** Be prepared to wear comfy shoes, bring an umbrella or a sport cap and a bottle of water.*



Pre-Congress Tour (Continued)

**Tour 3:
 Full Day –
 Genting Highlands**

Escape the heat of Kuala Lumpur and discover Genting Highlands. Located 6,000 feet above sea level. Take a cable car ride to the top of the highlands and admire the surrounding view of the hills.

Begin your journey to Genting Highlands with a beautiful scenic drive along the mountains. Amid the fresh air, ride the fastest mono cable car in the world to reach the top of the hill. While on it, marvel at the beautiful panoramic view of the green tropical rainforest below you.

As you reach the top, visit Malaysia’s only international casino resort, Casino de Genting. Afterwards, explore the many recreational facilities available here. Attempt the Sky Venture, the only skydiving simulator in Asia, and try other exhilarating rides at the resort’s theme parks.



Tours During Congress

**Tour 1:
 KL City Centre Tours**

18th May 2020 (Monday)

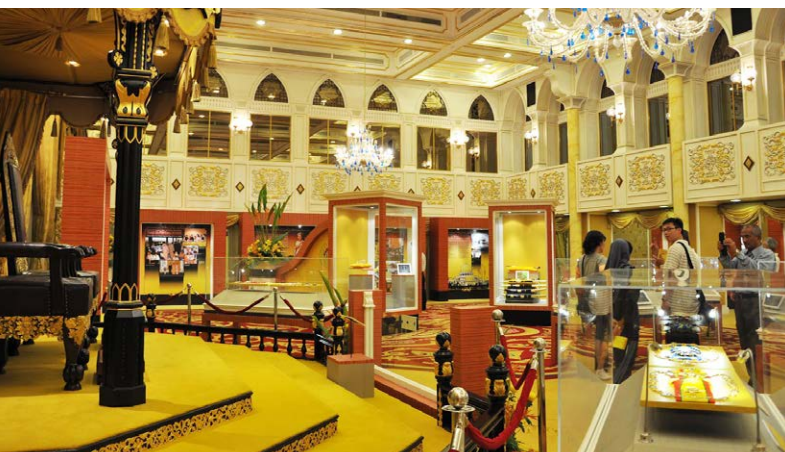
Tour Highlights:

- King’s Palace photo stop • Petronas Twin Tower photo stop
- National Mosque and Old Railway Station photo stop
- National Monument • Sultan Abdul Samad Building
- National Museum • Batik Painting



This interesting tour will unveil the beauty and charm of the old and new Kuala Lumpur known as the “Garden City of Lights”. Starting from where the city of Kuala Lumpur started, which is at the confluence of the two rivers, Gombak River and the Klang River. See the contrast of the magnificent skyscrapers against buildings of the colonial days.

By the end of the tour, you will probably feel as if you have “seen” the soul of Kuala Lumpur!



Tour During Congress (Continued)

Tour 2: Selangor and Putrajaya Tours

19th May 2020 (Tuesday)

Tour Highlights:

- Limestone hills of Batu Caves • Thean Hou Temple
- Putrajaya Taman Botani • Putrajaya government complexes
- Putrajaya Mosque • 3-deck Putra Bridge • Cruise Tasik Putrajaya – sharing



A ride out from the city takes you to the lush countryside of the Klang Valley. At Batu Caves, admire the 140-foot-tall (42-m) statue of the Hindu god Murugan, as well as temple sites built into 3 limestone caves. The Thean Hou Temple is one of the largest Chinese temple in South East Asia and beautifully decorated by dragon-inspired columns and immaculate rooftops.

Putrajaya is a city located south of Kuala Lumpur. It's known for its late 20th century architecture including the Putra Mosque, made from rose-colored granite with a pink dome. The 3-tiered Putra Bridge is inspired by Iranian architecture, with 4 minaret-type piers overlooking the man-made Putrajaya Lake.



Tour 3: Craft & Shopping

20th May 2020 (Wednesday)

Tour Highlights:

- Shopping at Brickfields "Little India" • Lunch at KL Tower
- KL Tower Observation Deck • Shopping at Central Market & Chinatown



Little India of Brickfields is always a bustling street, you can find sarees of any colors and designs, glass bangles, Indian candies, savouries and so on.

Atmosphere 360° at KL Tower offers a glorious lunch buffet spread showcasing modern authentic Malaysian & International cuisine. Sky Deck is the main tourist attraction at KL Tower. It is located at 300 meters above ground level, offering spectacular views of metropolitan city Kuala Lumpur.

Central Market is a One-stop Centre for Malaysian handicrafts, art, kebaya, songket, batik and a wide varieties of Malaysian food. The Petaling Street (Chinatown) offers almost everything here from clothes, souvenirs to electronic items to fabrics.



Post Congress Tour

Tour 1: 3 Days 2 Nights – Penang Getaway Enroute Tour of Ipoh Town

Penang, a UNESCO World Heritage Site, is a fascinating blend of Malay, British, Indian and Chinese cultures, cuisines and architecture. Among the sights to be seen here is the Cheong Fatt Tze Mansion in George Town, once the home of a 19th century millionaire, which has been carefully restored and turned into a boutique hotel. Away from George Town, the tranquil beaches of Batu Ferringhi provide a relaxed location for delegates to soak up some sun or partake in watersports and spa treatments at any of the numerous deluxe resorts.

Penang is also known as the food capital of Malaysia. A visit to any of the numerous hawker centres, the most popular one being on Gurney Drive, will give delegates a sample of various types of cuisines.

Ipoh, the capital city of Perak state is a quaint city with its old town's charm of beautiful and well-preserved colonial-style pre-war architecture buildings.



Tour 2: 3 Days 2 Nights – Langkawi Getaway

Steeped in legend, Langkawi is a 99 island archipelago with numerous sandy beaches and natural attractions. A duty-free port, the scenic, tranquil island is a favourite destination for visitors, both local and international.

In 2007, Langkawi was given World Geopark status by UNESCO with three main conservation areas: Machincang Cambrian Geoforest Park, Kilim Karst Geoforest Park and Dayang Bunting Marble Geoforest Park (Island of the Pregnant Maiden Lake). These three parks are the most popular tourism areas within the Langkawi Geopark. For some breath-taking views of Langkawi's rainforest canopy, there are cable cars to take visitors up to the famous Langkawi Sky Bridge.

The island is also well known for its beaches. From the restaurants and bars of the picturesque Pantai Chenang to the peace and quiet of the tranquil Pantai Kok, there's no shortage of beaches to enjoy some fun in the sun at Langkawi.



Pre-Congress Tour (Continued)

Tour 3: Sabah Getaway

3 Days 2 Nights – Tabin Wildlife or

3 Days 2 Nights – Borneo Rainforest Lodge or

4 Days 3 Nights – Kota Kinabalu or

4 Days 3 Nights – Sandakan & Kinabatangan Wetlands Resorts

Sabah takes pride in the mystical Mount Kinabalu, the highest peak in South East Asia, at 4,095.2 metres high. Designated as a World Heritage Site by UNESCO in 2000. Sabah is also known for its beaches, rainforest, coral reefs and abundant wildlife, much of it within parks and reserves.

As you will discover upon arrival, there is no shortage of adventures to be had in Sabah. Begin your journey from the region's capital, Kota Kinabalu, with tour that will show you the many treasures of Malaysian Borneo.

The Tabin Wildlife Reserve is home to various endangered wildlife such as the Borneo Pygmy elephants, Tembadau and exotic birdlife.



Tour 4: Sarawak Getaway

3 Days 2 Nights – The Giant Caves of Mulu or

3 Days 2 Nights – Mulu Pinnacles or

4 Days 3 Nights – Mulu Caves & Pinnacles

Sarawak, a Malaysian state on Borneo, stretches along the island's northwest coast. It's known for the rugged, dense rainforest of its interior, much of it protected parkland.

The Gunung Mulu National Park, a UNESCO World Heritage Site, is the largest national park in Sarawak and is dotted with swiftly flowing rivers, vertical cliffs and jungle streams. Its greatest attraction, however is the approximate 300-kilometre stretch of snaking passages buried beneath the forested mountains.

The Mulu Caves are the world's largest network of caves. High atop Gunung Mulu is The Pinnacles, an impressive alien landscape made up of jagged limestone formations dating from between 17 and 40 million years ago.



Tunnelling in Malaysia

The achievements in tunnelling and underground space development in Malaysia, in the past one and half decades are impressive. From the very beginning of the older tunnels constructed associated with the construction of dams (e.g. Kelinci Dam water transfer tunnel, diversion tunnel of the Sg. Selangor Dam, pressure tunnels and powerhouse for the Pergau Dam, etc.) and highways (e.g. Karak Highway twin tunnels and Penchala Link twin tunnels) and on to the subway Light Rail Transit (LRT) system, tunnelling activities have been gaining momentum in the 21st century with the construction of the Storm Water Management and Road Transport System (SMART) dual-purpose tunnel, Pahang-Selangor interstate water transfer tunnel, double tracking electrified railway tunnel and the most recently completed is the Klang Valley Mass Rapid Transit (KVMRT) from Sungai Buluh to Kajang as well as the planned High Speed Rail (HSR) and the East Coast Rail Link (ECRL) projects.

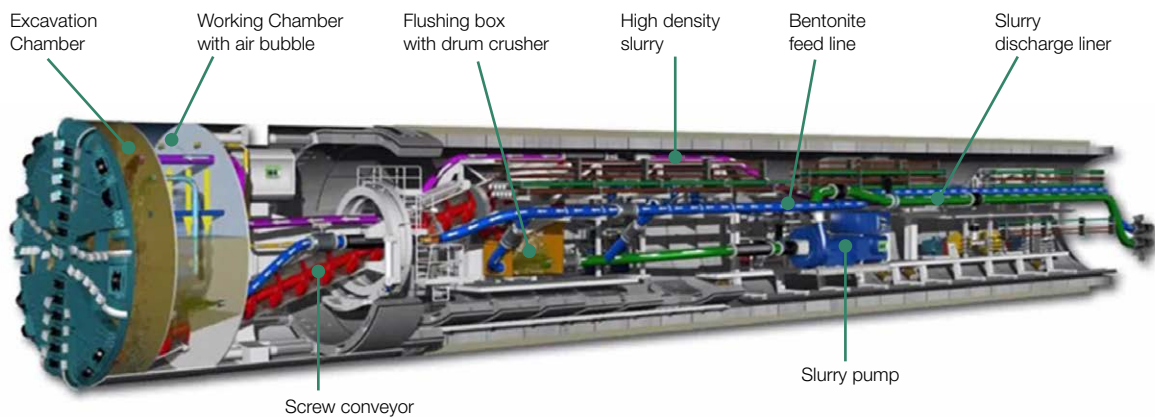


Karak Highway Twin Tunnel



Sungai Selangor Water Transfer Tunnel

Recent development in Variable Density TBM, conceptualised by Malaysian owned companies MMC-Gamuda JV through exhaustive research and collaboration with TBM supplier Herrenknecht AG and Ruhr-University, is the first-of-its kind in the world of the tunnelling industry. VD TBM has proven to be an effective tool to excavate in different types and yet challenging geology and performed beyond expectations when in successfully endured the tunnel drives of the Klang Valley MRT Project through underground karstic formation without any incident of the dreaded sinkholes or blowouts.



Variable Density Tunnel Boring Machine

It is worth also noting the success in of setting up the world's first tunnelling school, also known as the Tunnelling Training Academy (TTA) in record time in December 2011 to response to the urgent call to create high-income employments as Malaysia is shifting into high-gear as the nation enters a new era of economic transformation to achieve the coveted developed nation status by the year 2020 as well as to realise our need to create a sustainable pool of certified tunnelling workforce to cater for new phases of for the massive Klang Valley Mass Rapid Transit (KVMRT) project. TTA is the answer to the needs of the mega KVMRT project, as well as to create a sustainable industrial technology base to nurture expertise and boost productivity in tunnel engineering, enabling local players to take on more complex tunnel construction projects in the future.

Tunnelling in Malaysia (Continued)



Tunnelling Training Academy (TTA) Opening Ceremony in 2011

The following is a list of tunnelling projects recently completed in Malaysia and the projects in the pipeline together with their contribution to the advancement of the underground construction industry as a whole.

Tunnelling Activities in the Recent Past

Storm Water Management and Road Transport System (SMART)

An example of successful urban underground development to help solve urban problems, the innovative SMART project is a dual-purpose tunnel. The project provides a storm water diversion scheme including flood-water storage reservoir and a 9.7 km, 11.8 m diameter bypass tunnel, sufficient to save the Kuala Lumpur city from flooding at the time of inclement weather in the foreseeable future. With no major flood events over most of the years, the dual-purposes tunnel was engineered, with a waterway beneath the double-decks motorway built into the central 3 km section, relieving traffic congestion by providing 2 x 2 traffic lanes for cars connecting the city centre to the southern gateway, i.e. the KL-Seremban Highway.

SMART project won the British Construction Industry International Award in 2008 and received the UN Habitat Scroll of Honour Award in 2011 for its innovative and unique management of storm water and peak hour traffic.

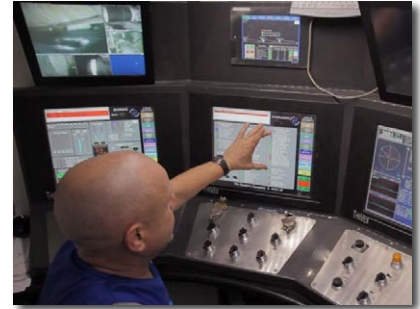


SMART Tunnel

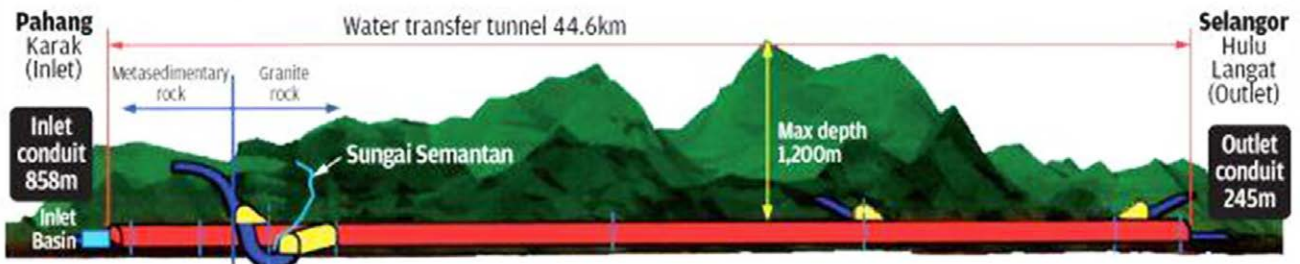
Tunnelling in Malaysia (Continued)

Pahang – Selangor Raw Water Transfer Tunnel

In June 2009, Malaysia began a project to build the Pahang-Selangor raw water transfer tunnel. It was to be one of the longest and biggest tunnels in Southeast Asia and the sixth biggest in the world - a 44.6 km long, 5.2 m in diameter tunnel with a water delivery capacity of 1.89 billion litres per day, laid underneath a mountain range between Pahang and Selangor states.



Pahang-Selangor Raw Water Transfer Project

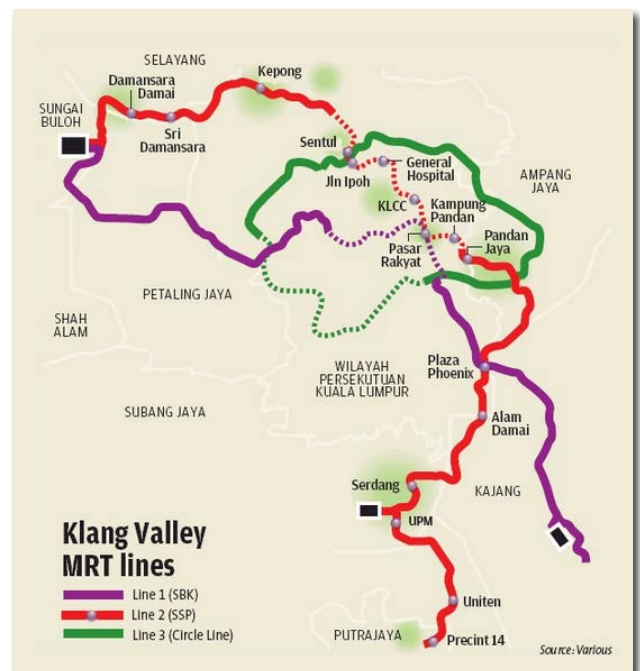


Pahang-Selangor Interstate Raw Water Transfer Tunnel

This huge excavation project was successfully completed in February 2014 and able to overcome the various challenges (e.g. over 50 m high empty cavern inside a mountain, pressurised spring water that shot out as much as 24.6 tonnes of water per minute, rock burst, etc.) thanks to the strong solidarity of its multinational team consisting over 1,000 workforce from 15 countries.

Mass Rapid Transit (Line 1 & 2), SBK Line & SSP Line

The Klang Valley Mass Rapid Transit (KVMRT) Project involves the construction of a rail-based public transport network, Mass Rapid Transit (MRT) system, together with the existing urban rail network, will form the backbone of the public transport system in the Greater Kuala Lumpur/ Klang Valley region. The first MRT line implemented is the 51 km Sungai Buloh-Kajang Line (SBK Line). Construction of the line began on 8 July 2011 and fully operational in July 2017. The MRT SSP Line is the second MRT line under construction. The line will serve a corridor with a population density of around 2 million people stretching from Sungai Buloh to Putrajaya. The SSP alignment is 52.2 km of which 13.5 km is underground. A total of 37 stations, with 11 of them underground.



Klang Valley MRT Lines

Tunnelling in Malaysia (Continued)

Mass Rapid Transit (Line 1 & 2), SBK Line & SSP Line (continued)

The successful completion of KVMRT SBK Line tunnels in Malaysia marks an important step in the use of Steel Fibre Reinforced Concrete (SFRC) tunnel segmental lining in South East Asia. The successful experience encourages other rail developers and contractors in the region to embark on the usage of SFRC tunnel lining for other suitable projects. Circle lines are now being planned.



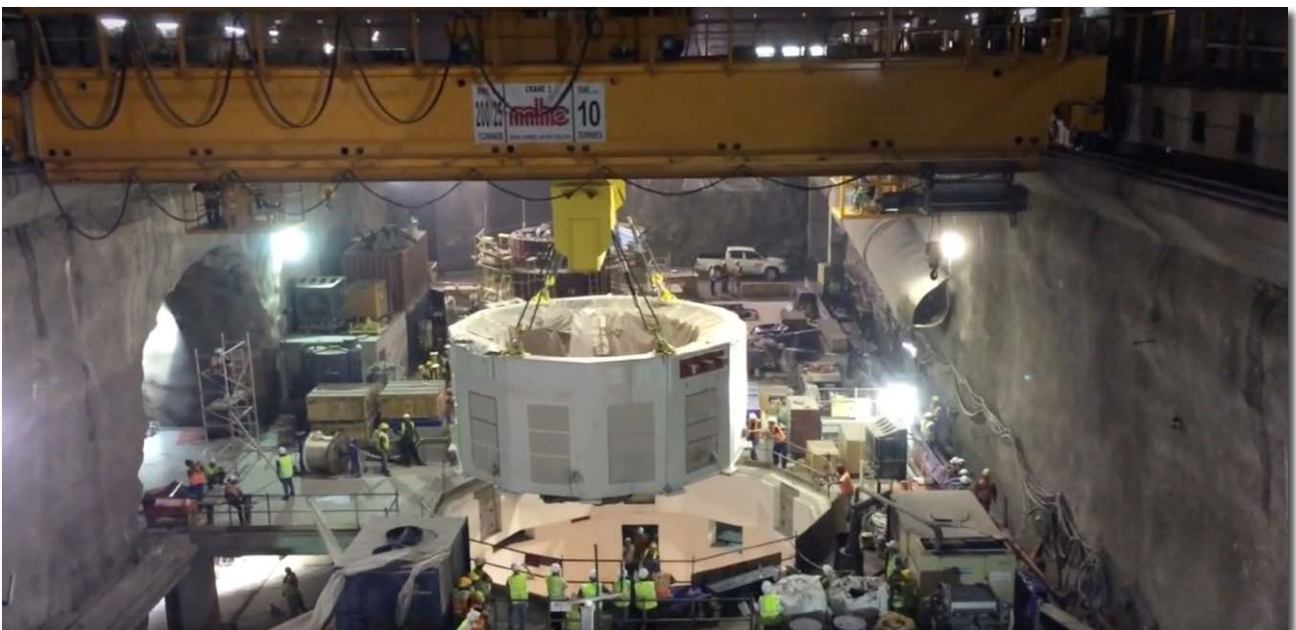
TRX Station and TBM Machines

Ulu Jerai Hydroelectric Project – Underground Powerhouse

The Ulu Jerai Hydroelectric Power (HEP) Scheme was initiated by the Tenaga Nasional Board (TNB), Malaysia to provide additional 326 Gigawatt hours (GWhr) power generation for the increase in electricity demand and to improve the reliability of the electricity supply. The HEP Scheme is located in the Cameron Highlands, Pahang State, West Malaysia and comprises water transfer tunnels from the Lemoi and Telom rivers into a 0.74 million (M) m³ capacity reservoir retained by the Susu Dam spanning the Bertam River Valley. The Ulu Jerai HEP Scheme commenced construction early 2011 for a Contract sum of MYR 820 million (US\$ 185 million) and is due for completion early 2017.

The project involves the construction of an underground plant, which will house two Francis turbines with a power output of 191 MW each and the construction of approximately 26 km of hydraulic tunnels, of which approximately 15 km excavated with Tunnel Boring Machines (TBM) and the remaining with the traditional method.

Other underground structures include headrace and tailrace tunnels, surge shaft, two pen stocks, transformer and surge chamber caverns. Construction of the water transfer tunnels were performed using a 3m diameter tunnel boring machine. The drill and blast technique was employed for the excavation of the underground power house, transformer and surge chamber caverns, headrace and tailrace tunnels and penstocks. The surge shaft was excavated using the raised boring technique.



Ulu Jerai HEP Underground Powerhouse

Tunnelling in Malaysia (Continued)

Bukit Berapit Rail Tunnel

Bukit Berapit Rail Tunnel, a 3300m twin tunnel is the longest rail tunnel in Malaysia. It is located in Bukit Berapit near Bukit Gantang, Perak, Malaysia. It was included as a part of Ipoh-Padang Besar Electrified Double Tracking Project. The tunnel was constructed as an alternative to the old winding tracks with many tunnels. The completion of this tunnel saw the closure of the Bukit Berapit Halt.

Construction of the tunnel started in 2008 and was completed in 2013. And now, it has been commissioned and is in operation.



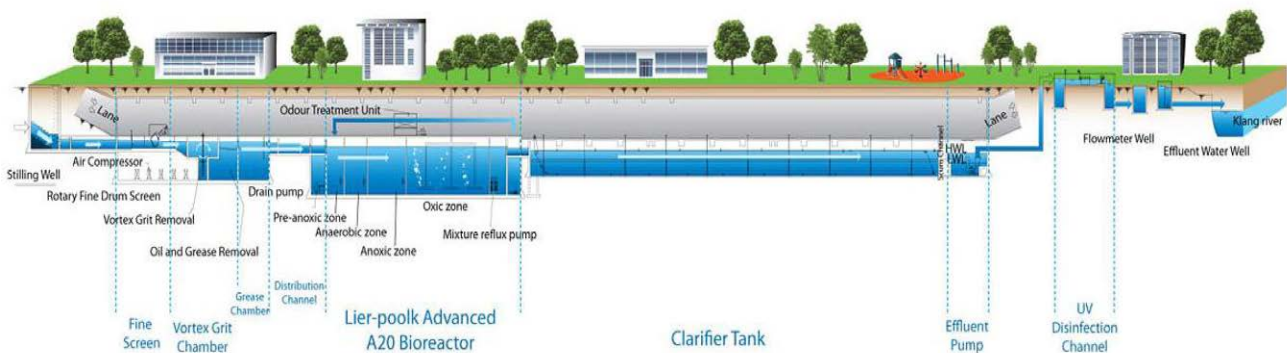
Bukit Berapit Rail Tunnel

Pantai 2 STP Green Transformation

The country's first and biggest sewage treatment plant (STP) as well as the largest in Asia Pacific, Pantai 2 Sewage Treatment Plant (P2STP), is constructed underground and equipped with state-of-the-art green technologies. The plant could cater to the growing population until year 2035. Once completed, the plant will be able to receive the sewage flow from a 6,700 ha Pantai catchment covering central and south-western parts of Kuala Lumpur.

A 1.423 million PE sludge management facility will be constructed to treat and manage the waste biological sludge, with the provision of bio gas power generation facility. The P2STP features various green technologies including utilising the skylight concept for the underground plant, effluent reuse, rainwater harvesting and the use of biogas and solar panels to generate electricity. The plant also uses energy-efficient equipment to reduce the amount of electricity consumed.

One of the main highlights of the project is the Pantai 2 STP which will be developed as an underground facility with ground/ area above the STP developed as a leisure park with sports, recreational, administration building and community facilities for the local residents.



Underground Sewage Treatment Plant (Pantai 2 STP)

Upcoming Tunnelling Projects

Mass Rapid Transit (Line 3), Circle Line

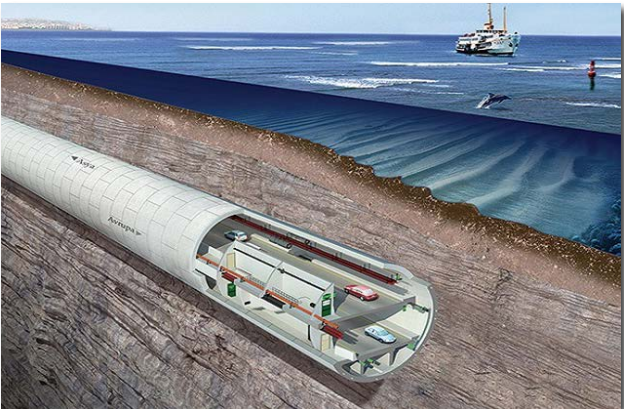
The Klang Valley MRT Line 3 Circle Line is a proposed new urban metro railway for Kuala Lumpur, Malaysia. The line is approximately 30+km long of which majority is expected to be underground tunnels and stations providing several interchanges with the existing rail network, including MRT Line 1 & Line 2, KLJ Line, APG Line, KTM and HSR.



Mass Rapid Transit (Line 3), Circle Line

Penang Undersea Tunnel

The Penang Undersea Tunnel is a 6.5km tunnel which will connect Butterworth, Seberang Perai in the east to George Town, Penang island in the west. When completed, it will become the first undersea tunnel in Malaysia and the second in the Southeast Asia. There will be a toll plaza at the undersea tunnel. With a cost of RM6.3 billion, the tunnel will be the largest privately funded public works project in Penang.



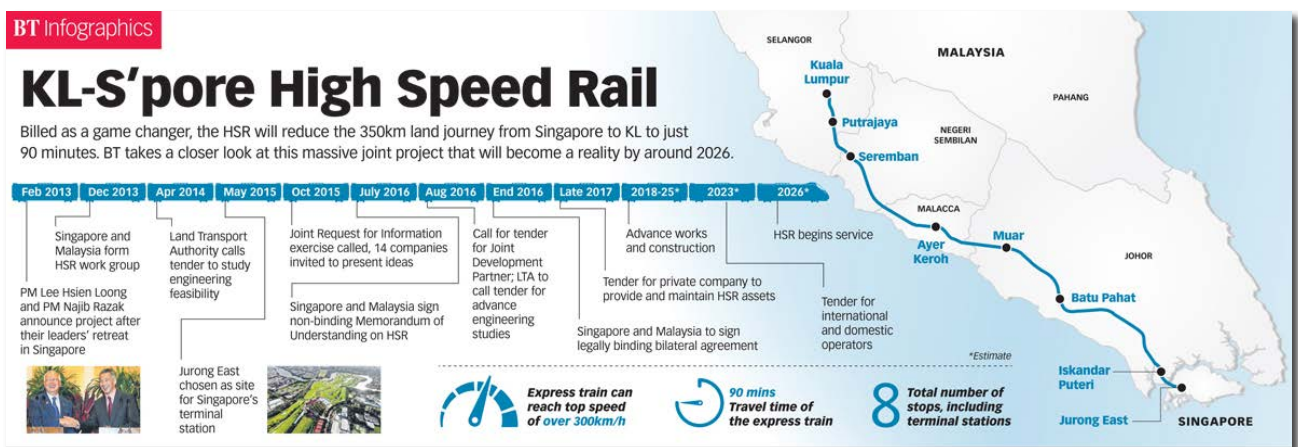
Penang Undersea Tunnel

Upcoming Tunnelling Projects (Continued)

The Kuala Lumpur-Singapore High Speed Rail

The High-Speed Rail (HSR) serves as an alternative mode of public transport travel between Kuala Lumpur and Singapore. It is seen to be in line with the transformation of the nation as it links two urban agglomerations to meet growing demand, catalysing economic growth and enhancing long term economic competitiveness while improving the quality of life of its people. The HST will connect 6 cities in Malaysia to Singapore, following a coastal route. The stations that have currently been identified are the terminus station in Kuala Lumpur (at Bandar Malaysia), Putrajaya, Seremban, Ayer Keroh, Muar, Batu Pahat, Iskandar Puteri and the final stop in Singapore (at Jurong East).

On the rapid transit system, it is likely that a bridge or an undersea tunnel will be built between the two countries. If the undersea tunnel was chosen for the project, then there would also be a choice of it being either a sunken tunnel or a bore tunnel. The undersea tunnel was more favourable option as it would cause minimal disruption to traffic movements during the construction period, as the project would be located nearby the Customs, Immigration and Quarantine (CIQ) complexes of Malaysia and Singapore. However, the decision will be made jointly by the governments of both countries later.



KL-Singapore High Speed Rail

East Coast Rail Link Tunnel

Infrastructure development is critical to the growing East Coast Economic Region (ECER) and rail is a key enabler for the region that can connect economic centres including industrial areas and provide a link to Greater Kuala Lumpur/Klang Valley efficiently. The new alignment of 640km East Coast Rail Line (ECRL) project runs through Kelantan, Terengganu, Pahang, Negeri Sembilan, Selangor and Putrajaya has been identified as a high impact infrastructure project that will form the backbone of ECER's multimodal transport infrastructure. It will connect smaller towns such as Mentakab and Kuantan in Pahang, Dungun in Terengganu and Tumpat in Kelantan and aimed at unlocking the economic potential of these towns as well as uplifting the livelihood of the people who live along the rail line. This will complement existing road/expressway infrastructure as the Lebuhraya Pantai Timur and the existing KTMB East Coast Line and ports.

The ECRL is totally new line based on double-track standard gauge, and might start from Serendah connecting the current rail track of KTM West Coast Line to Bentong and Mentakab and certainly will involve underground tunnelling at Titiwangsa Mountains. The current 70km Petronas single railway track Kerteh-Kuantan Port Railway Line purpose for Petronas oil refinery logistic infrastructure will be linked and upgraded into this project.



Upcoming Tunnelling Projects (Continued)

Bandar Malaysia Underground City

Taking inspiration from an underground complex in the Canadian city of Montreal, the development, called Bandar Malaysia, with an integrated mixed-use township that is almost 200ha in size, will house the country's first underground city. This mixed-use township will cost RM160 billion (US\$31.5 billion) will take more than 25 years to build, but there is already excitement over the subterranean part of the project. This underground city will then be the largest in the world. The underground city in Bandar Malaysia will include a shopping mall, canals, theme parks, cultural villages, a financial centre and the China state-owned construction group's own \$2billion regional headquarters.



Bandar Malaysia Underground City

Registration

ITACET Training Course

ITACET Training Course - 15 May 2020 to 16 May 2020

MYR 1,060.00

Conference & Exhibition

Participants Registration Category	Early Registration (Before 1 Dec 2019)	Standard Registration (1 Dec 2019 to 30 Apr 2020)	Onsite Registration (After 30 Apr 2020)
Presenting Authors/Co-Author	MYR 2,544.00	MYR 2,544.00	MYR 4,240.00
ITA Member Nation Category 3 Delegates	MYR 2,544.00	MYR 3,180.00	MYR 4,240.00
ITA Young Members (Under 35)*	MYR 2,226.00	MYR 2,226.00	MYR 4,240.00
Full Registration	MYR 3,392.00	MYR 4,240.00	MYR 4,240.00
Local Students (Under 35)**	MYR 1,060.00	MYR 1,060.00	MYR 1,060.00
Overseas Students (Under 35)***	MYR 1,590.00	MYR 1,590.00	MYR 1,590.00
Accompanying Guest / Spouse	MYR 1,590.00	MYR 1,590.00	MYR 1,590.00

* The registration fees is inclusive of Congress Session Attendance, Welcome Reception, access to the Exhibition, Congress Materials. To receive the early registration rates, WTC 2020 must receive your registration form and full payment by 30th November 2019. After this, standard walk-in registration fees apply.

** The upload of the ID Card/Passport is Mandatory.

*** The upload of the ID Card/University status are Mandatory.

Note - Fee is inclusive of 6% Sales and Service Tax (SST).

Dinners

'Buka Puasa' Dinner (19 May 2020, 19:00 – 23:00)	MYR 106.00 Per Person
Gala Dinner (20 May 2020, 19:00 – 23:00)	MYR 530.00 Per Person

* Rate inclusive of food and non-alcoholic beverages package. Alcoholic drinks will be available at additional costs.

Technical Visits

18 May 2020, 14:00-16:00 / 16:00-18:00	SMART Tunnel	MYR 106.00 Per Person
19 May 2020, 14:00-16:00 / 16:00-18:00	Tunnelling Training Academy	MYR 106.00 Per Person
20 May 2020, 10:00-13:00 / 14:00-17:00	KVMRT Line 2 & Line 3 Underground Works	MYR 106.00 Per Person
21 May 2020, Day tour	East Coast Rail Link & Pahang-Selangor Water Transfer Tunnel	MYR 265.00 Per Person

Note - All the above rates are inclusive of 6% Sales and Service Tax (SST).

Please register online at www.wtc2020.my

For any query, please contact World Tunnel Congress 2020 Secretariat at **+603 7958 6851** or via email at **wtc2020@iem.org.my**. Sign up for the WTC 2020 mailing list to receive all congress updates and latest news.

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