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SMART TUNNEL MITIGATES 45% OF KL FLOODS

By M. MAGESWARI

The case for more SMART tunnels to alleviate flood woes

THE recent torrential downpours throughout the peninsula saw the country battling one of the worst floods in a decade.

The Department of Statistics of Malaysia (DOSM) estimated that the floods in late December and early January caused losses amounting to RM6.1bil.

Based on the Special Report on Impact of Floods in Malaysia released by DOSM on case studies around the Klang Valley and socio-economic statistics, the RM6.1bil losses include damage to public assets and infrastructure, which suffered the highest loss of RM2bil, followed by housing (RM1.6bil) and vehicles (RM1bil).

The manufacturing industry suffered a loss of RM900mil, followed by business premises (RM500mil) and agriculture (RM90.6mil).

Selangor recorded the highest losses for all categories. The state government estimated losses caused by floods that hit Selangor at RM1.4bil, including RM400mil for infrastructure repairs (*The Star*, Feb 4 2022).

In addition, intangible losses do not have a specific monetary value, such as the 54 lives lost, irreversible damage to the ecosystem, increase in infectious diseases and a surge in Covid-19 infections among flood victims as reported in the media.

About 45,000 tonnes of rubbish were collected after the floods in the Klang Valley by KDEB Waste Management Sdn Bhd as of Jan 4, which is equivalent to the weight of 25,000 adult elephants – an increase of three-fold in post-flood waste compared to pre-flood, filling up landfills and elevating pollution risks.

Beyond that, the flood chaos also impacted the community and infrastructure. More than 350 areas were hit with power cuts, with water supply disruptions in over 470 locations – which affected businesses and brought port operations and traffic to a standstill.

Disaster averted

On Dec 18 last year, the Stormwater Management And Road Tunnel (SMART) diverted five million cubic metres of water (equivalent to almost 2,000 Olympic-size swimming pools), despite three million cubic metres being its maximum capacity – preventing major floods in the KL city centre.

This was done by prolonging the diversion period through SMART tunnel and the existing retention ponds, especially the Berembang and Taman Desa retention ponds.

If these retention ponds were to be reduced in size and capacity to make way for development, the risks of major flooding in the Klang Valley would be higher.

“SMART made the KL city centre more resilient than it was during the 1971 flood disaster, which claimed 32 lives,” said SMART chief operating officer Mohd Noor Mohd Ali.

He said that the SMART tunnel alone could address 45% of Klang Valley’s major floods, and without it, the floods in the Klang Valley could have been a lot worse, and the city centre would have sunk on that December weekend.

Based on Department of Irrigation and Drainage Malaysia calculation, the total damage along the SMART tunnel alignment during the recent floods – such as property, businesses, recovery efforts, and mobilising assets, among others – amounted to RM20.2mil. Without the tunnel, the damage would have been more.

Datuk Seri Ismail Sabri Yaakob said that Shah Alam may be getting a SMART tunnel system as a solution to mitigate floods in the area (*The Star*,

Feb 4 2022).

The prime minister said this was part of measures identified to resolve flood issues nationwide, and that a national disaster management committee meeting chaired by him had heard a proposal for SMART tunnels to be constructed, especially in high-density areas such as Shah Alam.

Gamuda Berhad with its experience building the SMART tunnel in Kuala Lumpur has submitted a proposal for the Shah Alam catchment.

SMART is a 9.7km-stormwater bypass tunnel, starting from the Klang River at the north to the Kerayong River at the south. SMART is the longest tunnel in the country and works on a four-mode system.

Since it was opened to traffic in May 2007, the SMART tunnel has diverted floodwaters on 40 occasions and averted an estimated RM1.4bil in public damage.

Besides that, the SMART tunnel helps to reduce traffic jams during daily rush hour.

Urban resilience

SMART is touted as a visionary infrastructure built 14 years ago with a sustainable, climate change solution in mind. It is innovative and unique, and the design incorporates green infrastructure.

The SMART tunnel which received a UN-Habitat Scroll of Honour Award was recognised in 2011 for its climate mitigation functions. SMART continues to evolve and improve its ESG value.

SMART comes with additional features not seen in a typical motorway tunnel. There are ventilation or escape shafts at 1km intervals throughout the tunnel, and cross passages at 250m intervals along the motorway tunnel for emergency exits.

In the tunnel, there are 212 closed-circuit televisions (CCTVs) cameras, routed to SMART’s command centre and BARCO wall, which shows 70 CCTVs screen at one time.

The tunnel is also armed with custom-built fire engines. The first responder vehicles are specially designed for accessibility within the tunnel and are equipped to perform necessary fire and rescue emergencies.

To maximise mobility with minimal energy consumption, SMART has replaced its entire tunnel lighting with an energy-efficient light-emitting diode (LED) system.

The SMART tunnel partnered with navigation and telecommunications providers to install Bluetooth-enabled devices, known as Waze beacons.

In 2020, 240 transmitters were fitted along the 5.2km route, allowing tunnel users to enjoy seamless navigation regardless of telecommunications network provider, via a series of battery-operated Bluetooth low energy micro-controllers emitting wireless signals.

Soon the SMART tunnel will be directly linked to the Tun Razak Exchange underground parking space, which could accommodate 5,000 car parks to boost the upcoming international business district connectivity by the end of this year.

The tunnel has contributed significantly to mitigating climate change effects in the city centre.

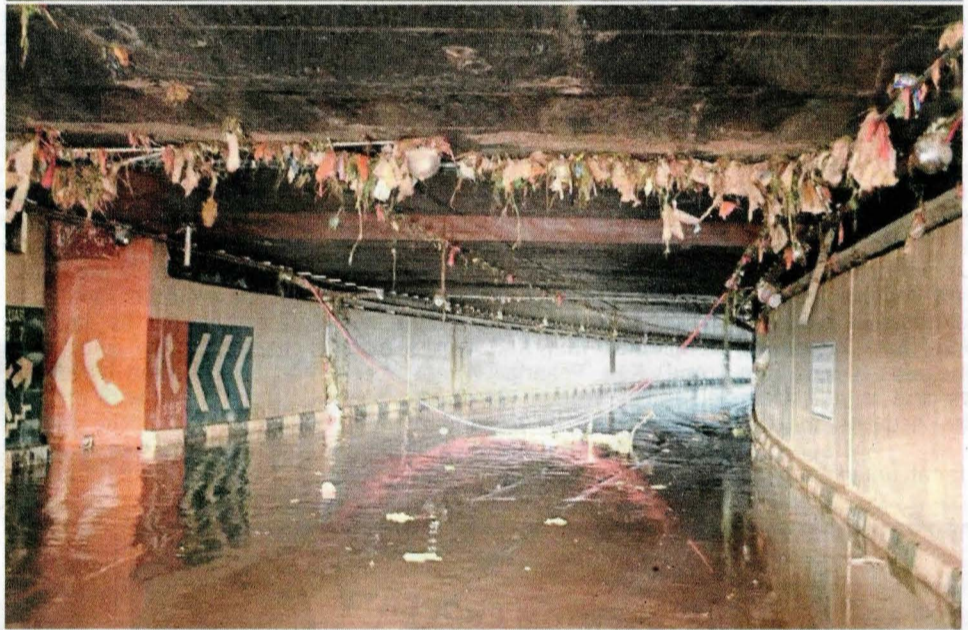
SMART, a national icon and pride, has attracted worldwide attention for its innovative design, putting Malaysia on the map of international engineering.

The tunnel has demonstrated the degree of urban development Malaysia has achieved and is an example for other developing countries to emulate.

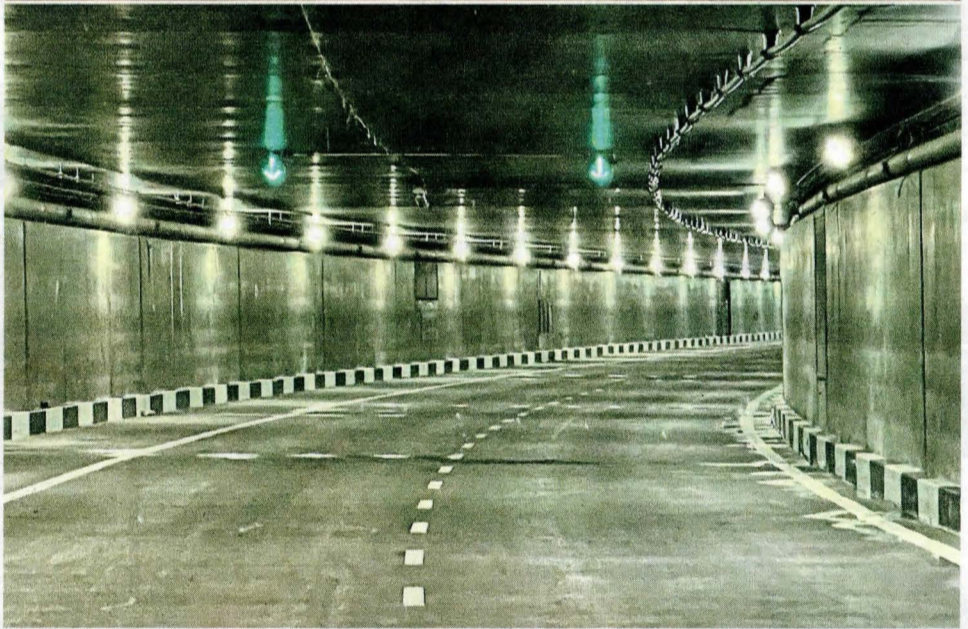


CCTV images of the SMART tunnel after activation:

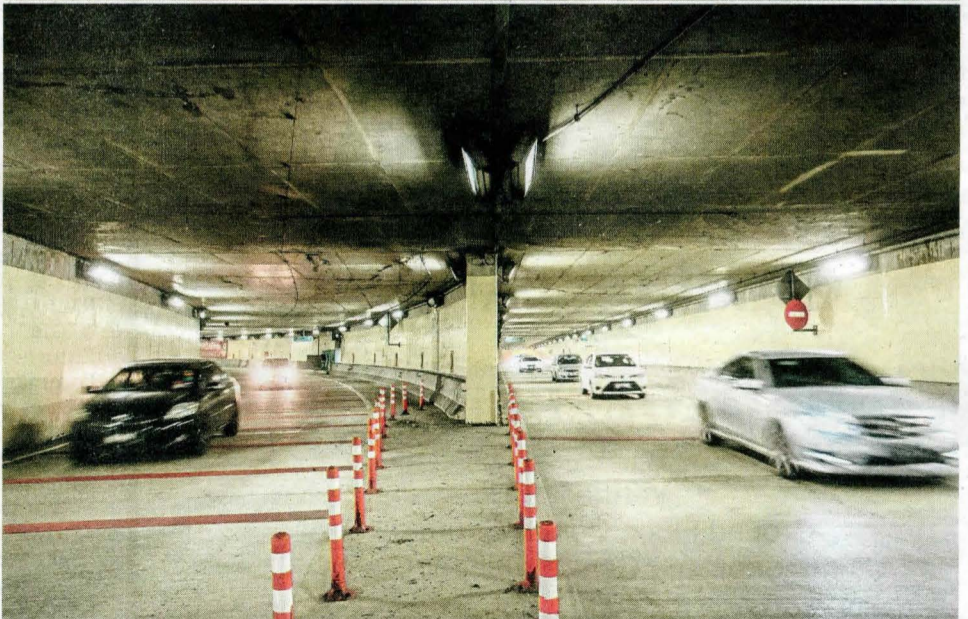
Water diversion in progress.



The filth left behind in the tunnel after water diversion.



The tunnel fully cleaned up after a water diversion operation.



SMART tunnel reopened to traffic.