MINIMAL FLOODS IN AREAS COVERED BY SMART TUNNEL

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KUALA LUMPUR: Areas such as Dataran Merdeka in the city centre are spared from major flooding during heavy downpours because of the Stormwater Management and Road Tunnel (SMART).

Other areas within the Klang Valley impacted by flash floods on March 7, including Kuchai Lama and Jalan Klang Lama, however, were not within the SMART tunnel flood alleviation system coverage area.

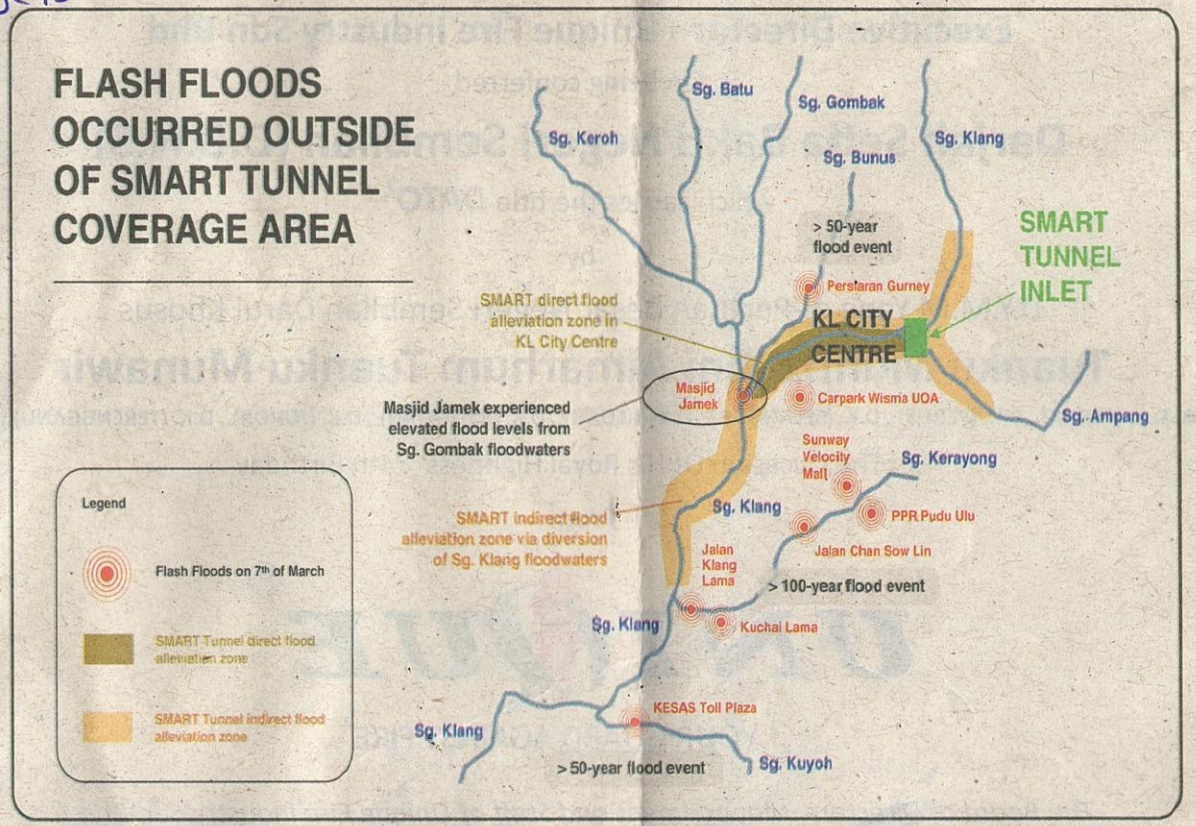
The SMART tunnel was designed to directly mitigate flooding issues within catchments associated with the overflowing of the Sungai Klang section that passes through KL city centre.

During intensive rainfall, flash floods typically occur via overflowing of rivers and/or exceeding the capacity of localised drainage networks.

The badly hit areas in Kuala Lumpur on March 7 was due to two contributing factors – insufficient carrying capacity at rivers particularly Sungai Kerayong, Sungai Bunus and Sungai Kuyoh which are outside of the SMART tunnel flood alleviation zone, and intense rain overwhelming the local drainage networks in these areas.

Environment and Water Minister Datuk Seri Tuan Ibrahim Tun Man described the intense rainfall recorded on the evening of March 7 as "half a month's average rainfall in two hours."

This level of rainfall equates to exceeding a "one-in-100-years" event in some areas such as the Sungai Kerayong catchment – resulting in damaging flash floods in the surrounding areas like Kuchai Lama and Jalan Klang Lama.



Map illustrates the areas affected by flash floods in Kuala Lumpur on March 7, and the direct and indirect flood alleviation zones of the SMART tunnel. – Source: Smart Motorway Tunnel

The SMART tunnel diverted over one million cubic metres of floodwaters on March 7, despite utilising a mere one-third of its overall capacity of its four-mode system, with Mode 4 (full closure for flood water diversion) not requiring activation.

This was because the catchments which it serves experienced relatively lower rainfall intensity compared to other areas in Kuala Lumpur that were hit by the flash floods.

In contrast, the SMART tunnel had to utilise 100% of its capacity in diverting floodwaters in the December floods last year because the rain intensity patterns then affected different areas – in particular the Sungai Klang and Sungai Ampang upstream catchments.

The SMART tunnel is capable of storing three million cubic metres of floodwater at any time and diverted a total of five million cubic metres of floodwater in the December floods by extending its diversion period for a record 22 hours.

In terms of SMART tunnel operations on March 7, intense rainfall started in Kuala Lumpur at around 2.30pm. Mode 2 was activated at 3.45pm with the rising flow rates of Sungai Klang, followed by Mode 3 at 4.40pm in anticipation of proceeding to Mode 4 which involves complete closure of the tunnel for flood water diversion.

However, Mode 3 remained active until 8pm as the rain intensity started to subside and Sungai Klang levels remained manageable and did not spill over throughout. As such there was no need to progress to Mode 4.

The tunnel was reopened to the public at 10pm, as SMART is a dual-purpose tunnel that provides an alternative option for traffic dispersal to ease traffic congestion at the southern main gateway to Kuala Lumpur when not diverting floodwaters.

Masjid Jamek in particular within the SMART coverage zone experienced some rising flood levels not from Sungai Klang but rather the backflow from the overwhelmed Sungai Gombak in addition to aggregated flows from Sungai Keroh and Sungai Batu upstream.

The severity of flooding damage at Masjid Jamek was indirectly alleviated to a certain extent via the diversion of the Sungai Klang floodwaters by the SMART tunnel.

Masjid Jamek has been spared major flooding damage by the SMART tunnel multiple times in the past and Mode 4 has been activated nine times to date; twice in 2021.

Given the advent of climate change which is now upon us, increased frequency of extreme weather events is forthcoming.

A holistic flood mitigation solution particularly targeting the north-western side of Kuala Lumpur within the catchments of Sungai Gombak and Sungai Bunus will need to be expedited on top of a robust maintenance regime for our local drainage networks to minimise the future impact of these extreme weather events in the Klang Valley.