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Singapore buildings 'can withstand tremors from strongest quake'



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They will remain structurally safe due to good construction, support from lift shafts: Experts



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When an earthquake of magnitude 6.7 hit Sumatra at the weekend, Singaporeans living in residential areas such as Sengkang and Tanjong Rhu felt the earth move.

As objects in their homes shook and rattled, the thought in many residents' minds was: Can my Housing Board block withstand the tremors?

"Yes" was the response of experts interviewed by The Straits Times.

"The quake would have to be three to four times stronger to cause some light damage in Singapore," said Associate Professor Li Bing of Nanyang Technological University's (NTU) School of Civil and Environmental Engineering.

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Even tremors from the strongest quake possible at the nearest fault zone to Singapore would not topple tall buildings here, like a 25-storey HDB block, the experts added.

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Most likely, the building will experience low-level damage, but it would be structurally safe, said Assistant Professor David Lallemand of NTU's Earth Observatory of Singapore.

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One reason is the lift shafts inside tall structures, he added. These shafts are built to support and prevent the buildings from swaying too much.

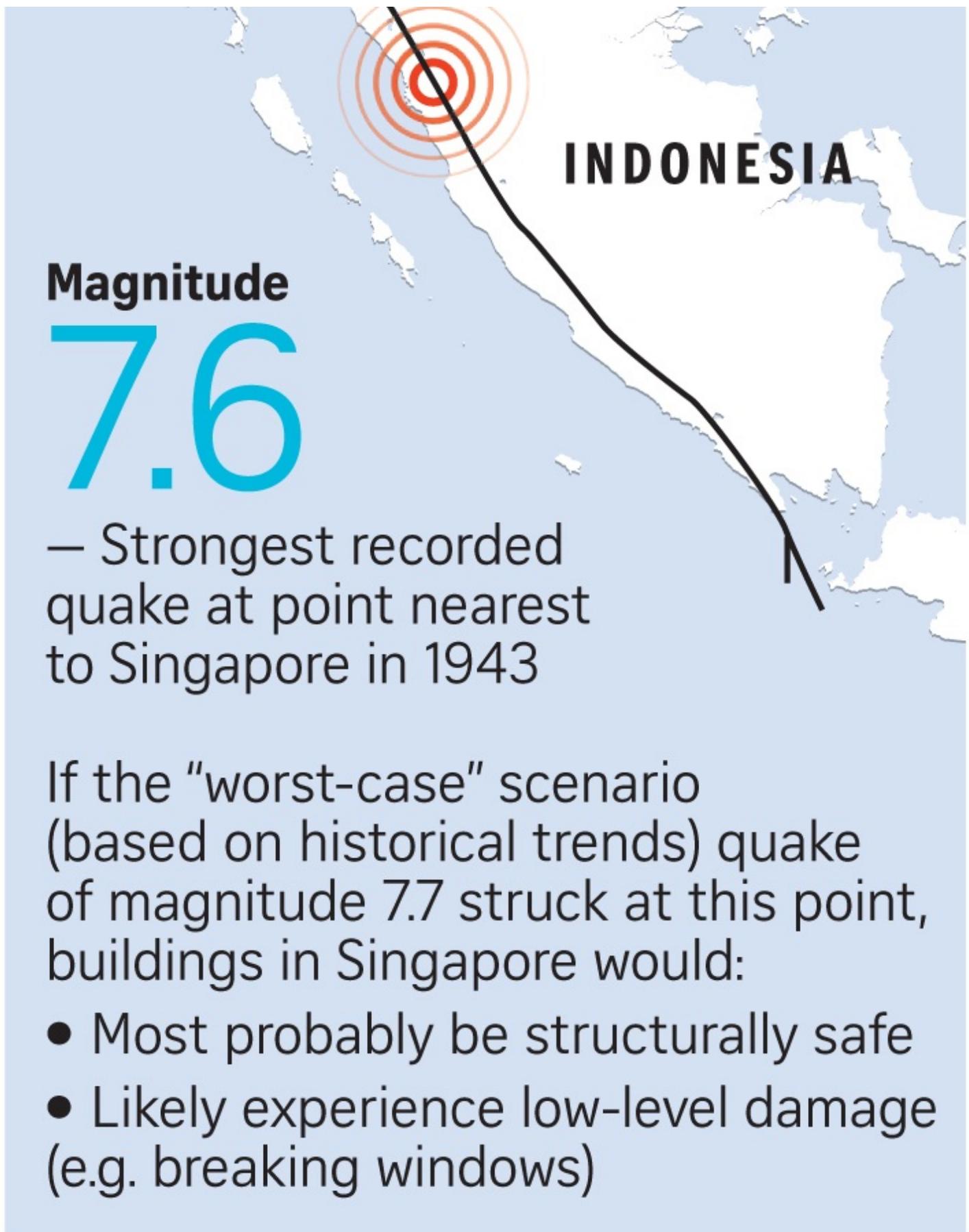
Prof Lallemand likened it to a shelf from furniture retailer Ikea: "The back part of the shelf - the metal 'x' - is what keeps it from swaying."

Another reason is that Singapore's buildings are well constructed, Prof Li said, adding: "Just as healthy people are less likely to get diseases."

In June 2000, Singapore was also shaken by tremors from an earthquake in Sumatra that measured 6.5 on the Richter scale.

They happened at around midnight and hundreds of residents from East Coast to Yio Chu Kang fled their homes as the series of strong tremors shook their beds and caused things to fall out of their cupboards.





Then Home Affairs Minister Wong Kan Seng emphasised that such natural occurrences were normal. Singaporeans should not be too worried or concerned, he said, adding: "If the earthquake is very severe, then Singaporeans will of course feel it in their homes".

Since then, the Government has also adopted a set of building codes that includes guidelines on making new buildings more resistant to earthquakes.

It was introduced in 2013 by regulator Building and Construction Authority (BCA). Older buildings that undergo major renovations will be brought up to the new standards.

Around the same time, a study concluded that it is unlikely for a quake to occur near and powerful enough to damage buildings in Singapore.

It was done by Professor Pan Tso-Chien of NTU's Institute of Catastrophe Risk Management.

The fault zone nearest to Singapore is the Sumatra fault and the strongest recorded earthquake it generated was of magnitude 7.7 in 1892.

In 1943, an earthquake struck at the point of the Sumatra fault that is closest to Singapore, around 400km away. The most powerful tremor it caused was of magnitude 7.6.

A BCA spokesman told The Straits Times that seismic waves from earthquakes along this fault zone closest to Singapore would arrive here at levels not significant enough to cause structural damage to buildings.

However, senior research fellow Aron Meltzner of NTU's Earth Observatory of Singapore urged caution. Although no similarly powerful tremors have occurred along the Sumatra fault since World War II, this does not mean it will not happen in the future, he said.

"Magnitude-7.7 earthquakes have happened in our historical past. We should plan for the likelihood of that within our lifetime," he added.

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