

## Underground reservoir could solve flood problems: expert

By Joanne Chan | Posted: 22 March 2012 1649 hrs

SINGAPORE: An underground reservoir 100 metres beneath the surface could be one way to solve Singapore's flood problems. This was a suggestion by a prominent engineering expert, Professor Lui Pao Chuen, an adviser to the Underground Master Plan Task Force.

Prof Lui, who shared his thoughts at a talk organised as part of World Water Day, pointed out that Singapore's annual rainfall has been increasing over the past 30 years - from 2000 to 2600 millimetres a year.

Using data from one of the 28 weather stations in Singapore, Prof Lui said the maximum rainfall within an hour has also went up from 90 to 120 millimetres.

Prof Lui noted that Singapore's drainage system is designed to cope with about 80 millimetres of rain in an hour, and said that decisions have to be made now to protect Singapore against increasing rainfall intensity.

With a limit to how much drainage capacity can be increased, taking into account cost and land constraints, other solutions will need to be considered.

One of them is to harvest storm water with shafts and underground tunnels.

Prof Lui said: "Whether the rainfall intensity will actually increase, we don't know. But if it increases, then we've got no choice but to go below with tunnels. And the tunnels must drain into somewhere - it cannot drain into the sea because its below sea level. So it's got to drain into a low-level... which obviously will be some sort of reservoir. And you can use the water."

Shafts and tunnels can be dug into the ground can divert storm water into rock caverns 100 metres beneath the surface. In the event of a drought or when reservoir levels drop, the stored fresh water can be pumped up.

Prof Lui acknowledged that the high cost of excavating deep underground may be too prohibitive. He estimates that it will cost S\$1 billion for 20 rock caverns, each with the capacity of half-a-million cubic metres.

But he said the benefits outweigh the cost.

He said: "You can sell the rocks, so it will reduce the cost of excavation. The more capacity you have, the less you need to desalinate. So basically you're comparing the cost of desalination with the cost of this project."

Responding to queries from Channel NewsAsia, national water agency PUB said it will explore the feasibility of underground rock caverns as a possible long-term solution to storing storm water.

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Photos

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File photo of people walking in the rain.

### Video



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