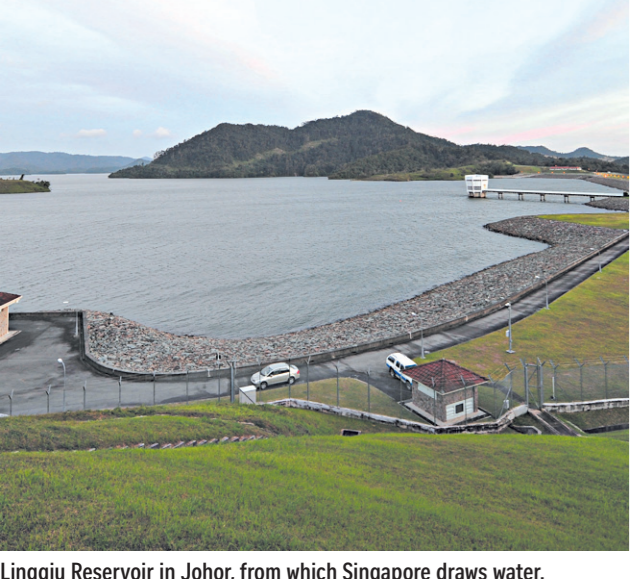


WATER LIFELINE

Singapore has become more self-sufficient in water since independence.

1961
Singapore inks pact with Malaysia to draw 86 million gallons of water a day from Gunung Pulai, Pontian, Skudai and Tebrau.

1962
Second pact with Malaysia to draw up to 250 million gallons of water a day from the Johor River.



1963
Public Utilities Board (PUB) set up to take charge of water supply. Water rationing for 10 months due to drought.



1965
Singapore separates from Malaysia. Both countries agree to abide by 1961 and '62 pacts.

1971
Launch of first water campaign "Water is Precious".

1972
First Water Master Plan, to ensure diversified and adequate supply.

1987
The Singapore River, into which all kinds of waste were poured, was successfully cleaned up after 10 years.

1991
Water Conservation Tax introduced.

1997
Goal of modern sanitation for all reached.

2000
Start of construction of first phase of Deep Tunnel Sewerage System (DTSS), to collect every drop of used water. Newater test plant opens in Bedok.



2003
Launch of two Newater plants in Bedok and Kranji.

2001
PUB adds drainage, water reclamation and sewerage systems to portfolio.



2005
First desalination plant completed in Tuas.

2007
PUB wins Stockholm Industry Water Award for its work on Newater and other projects.

2008
Marina Barrage (right) is completed, the first reservoir in the city and Singapore's 15th.



2010
Fifth and largest Newater plant opens in Changi.

2009
Changi Water Reclamation Plant, the heart of Phase I of DTSS, opens.

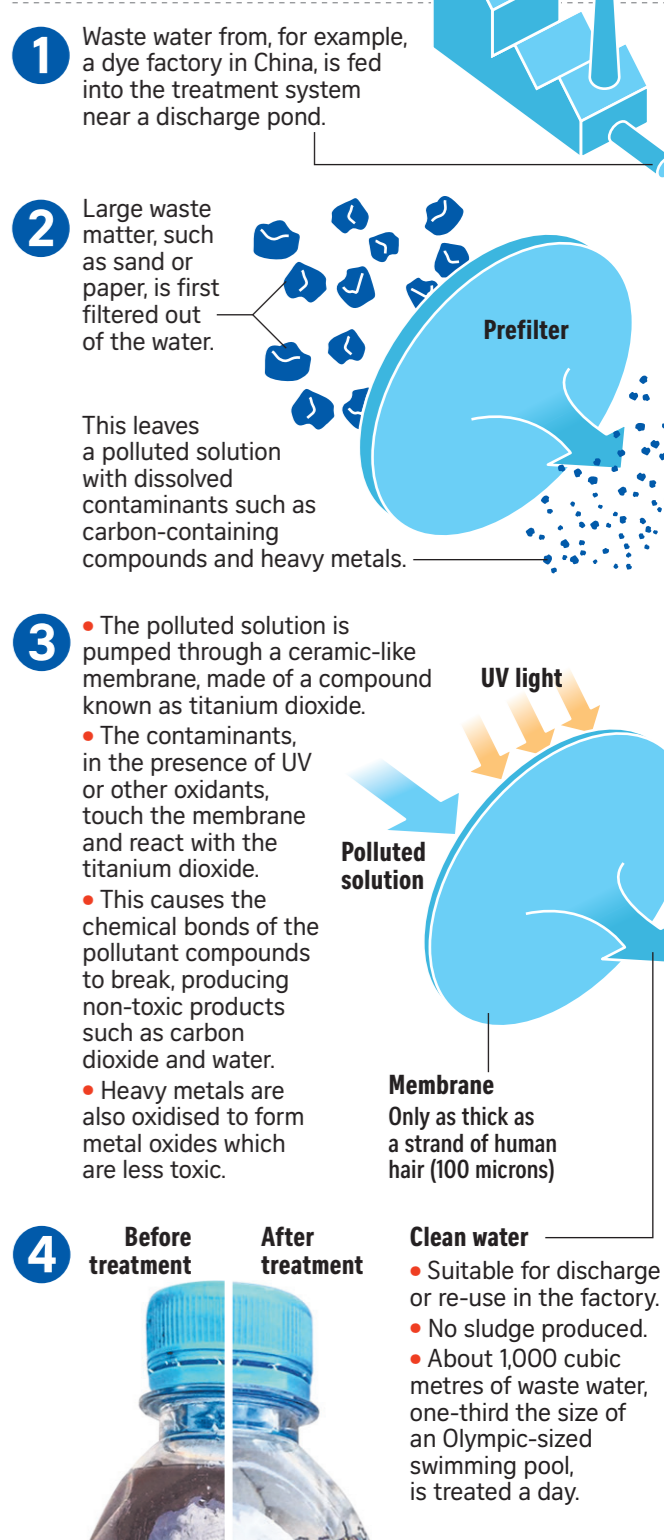


BY 2019
Third desalination plant in Tuas and fourth in Marina East to be ready.

2013
Second desalination plant opens in Tuas.

2011
1961 water agreement with Malaysia lapses. Two new reservoirs in Punggol and Serangoon open, raising water catchment area from half to two-thirds of island.

How NTU's self-cleaning membrane works



Advantages
• Total operational cost savings:
About 30 per cent lower than conventional water treatment
• Energy savings:
About 40 per cent

Sources: PUB, NANYANG TECHNOLOGICAL UNIVERSITY, STRAITS TIMES GRAPHICS, PHOTOS, STRAITS TIMES FILE, PHOTOS, PUB