# Sewage superhighway

Construction started on the second phase of a $10 billion underground used water transportation system yesterday. When completed in 2025, it will free up land and give Newater production a boost.

## What are the advantages of a deep tunnel system?

**Optimising land use**

The completion of the entire Deep Tunnel Sewerage System (DTSS) will result in the phasing out of pumping stations and conventional water reclamation plants (WRPs) around the island, freeing up 50 per cent of land occupied by these infrastructures for other higher-value developments.

**Land freed up by Phase 1**
110ha

**Land freed up by Phase 2**
83ha

**Ensuring the sustainability of Newater**

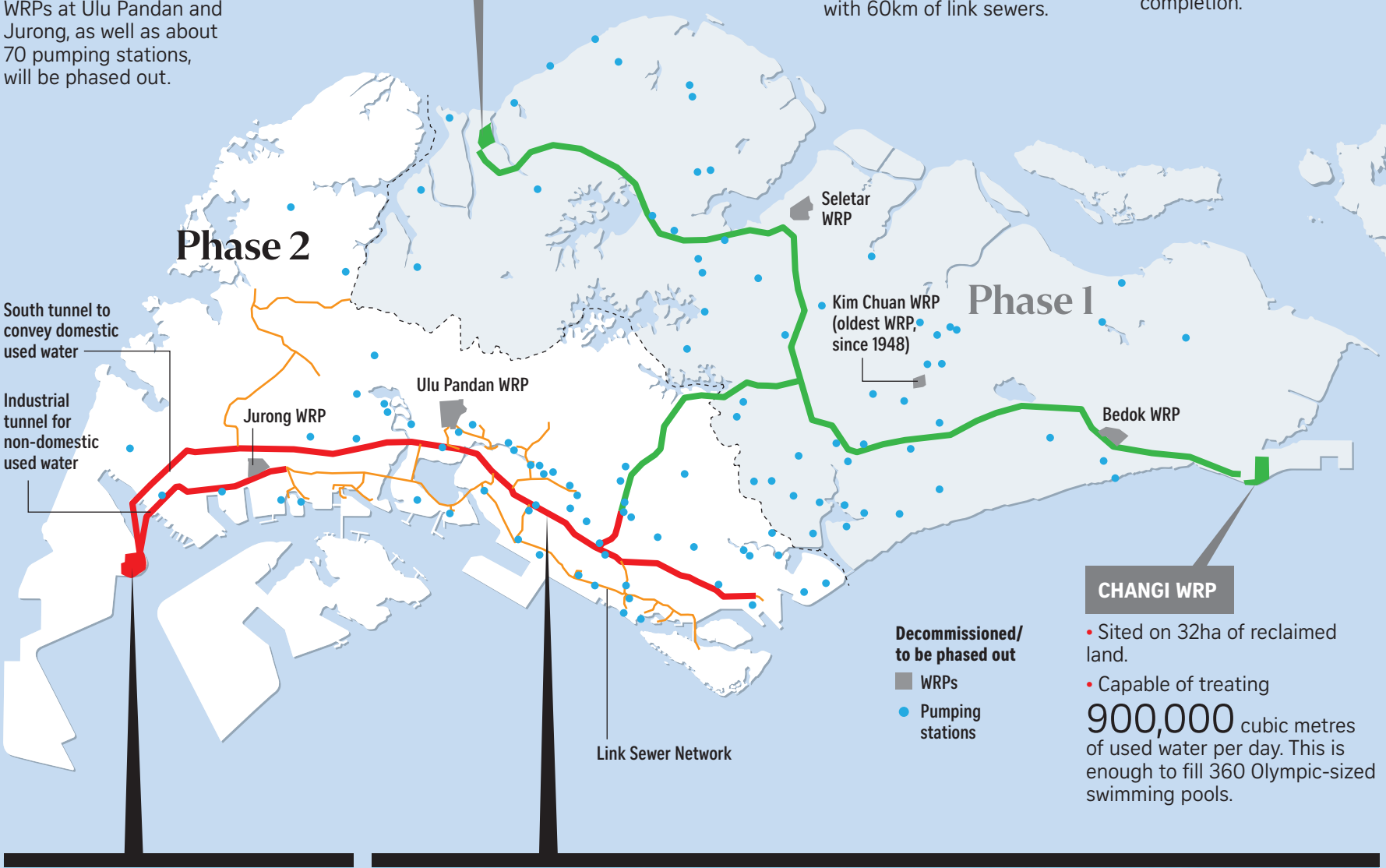
By collecting every drop of used water, DTSS allows for efficient, large-scale water recycling.

## Phase 2

- Will cost $6.5 billion to build and is expected to be completed by 2025.
- Upon completion, existing WRPs at Ulu Pandan and Jurong, as well as about 70 pumping stations, will be phased out.

## Phase 1

- It cost $3.4 billion and was completed in 2008.
- 48km-long deep sewer tunnel running from Kranji to Changi with 60km of link sewers.
- Seletar, Kim Chuan and Bedok WRPs, as well as pumping stations, were decommissioned upon completion.




### TUAS WATER RECLAMATION PLANT

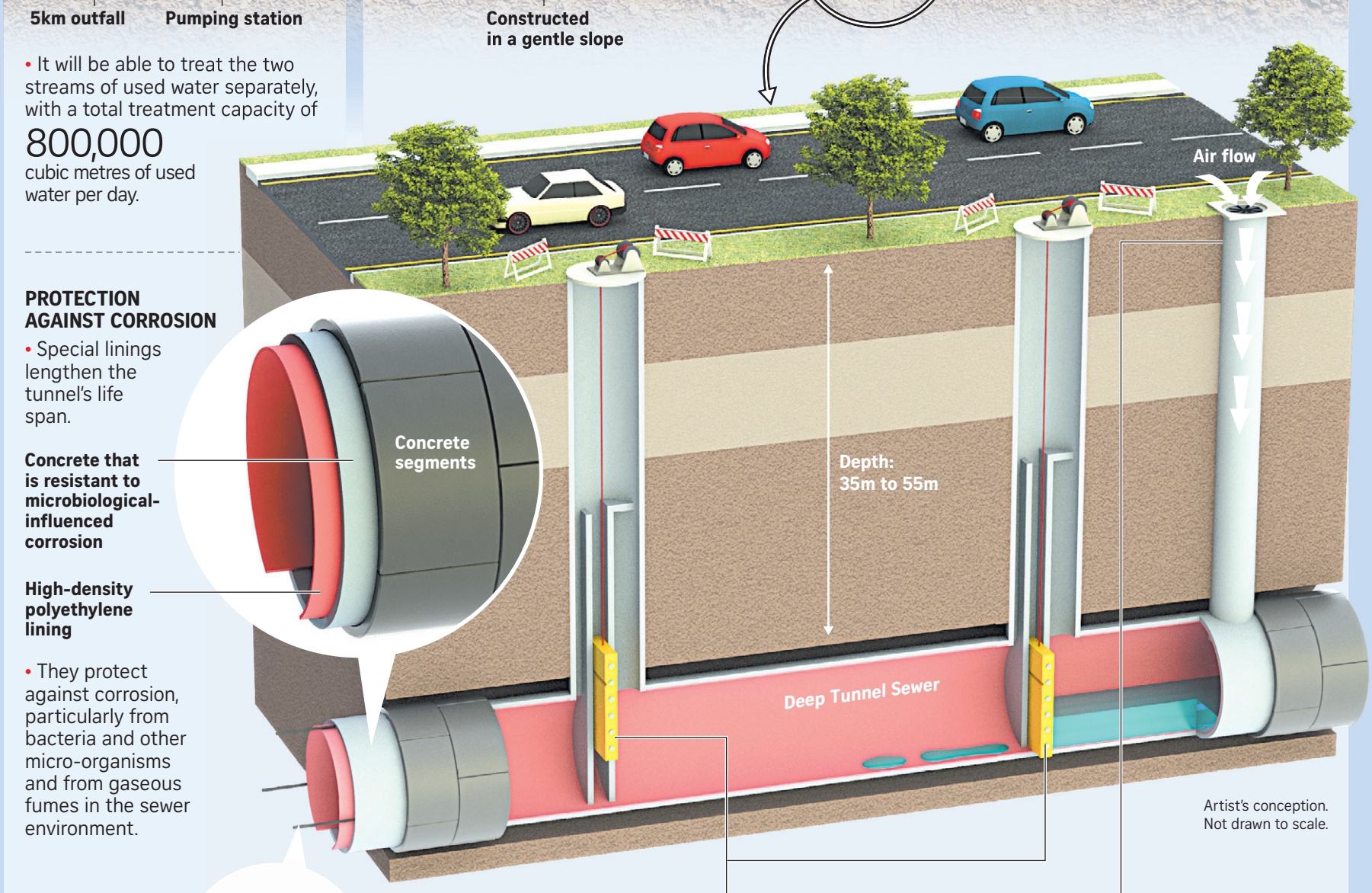
- The new plant, which will be completed in 2025, will treat used water from municipal and industrial sources which will be transported by gravity separately by the conveyance system to the new WRP.
- It will be able to treat the two streams of used water separately, with a total treatment capacity of 800,000 cubic metres of used water per day.

### DEEP TUNNEL SEWER

- Used water from existing sewers is fed to this 40km tunnel, which uses gravity to channel the water to Tuas.

### LINK SEWER NETWORK

- Sewer network connects the existing sewerage system to the deep tunnel sewer.



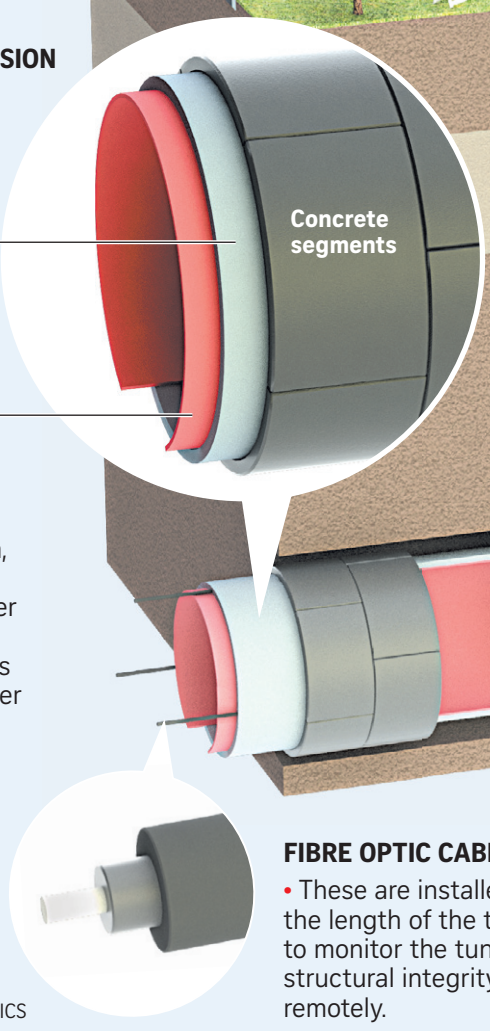

### PROTECTION AGAINST CORROSION

- Special linings lengthen the tunnel's life span.

**Concrete that is resistant to microbiological-influenced corrosion**

**High-density polyethylene lining**

- They protect against corrosion, particularly from bacteria and other micro-organisms and from gaseous fumes in the sewer environment.



### FIBRE OPTIC CABLES

- These are installed along the length of the tunnels to monitor the tunnel's structural integrity remotely.

### ISOLATION GATES

- Shafts are designed with gates deployed to isolate the tunnel, allowing safe access by employees if repairs are required.

### AIR FLOW MANAGEMENT

- Air jumpers, which are essentially giant fans, act as forced ventilation to push air back into the tunnel for treatment by odour control facilities located downstream.

Source: PUB

STRAITS TIMES GRAPHICS