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Ladies and Gentlemen

1 This ground-breaking ceremony marks the beginning of construction of the Deep Tunnel Sewerage System (DTSS) and is a milestone event in the development of our sanitation system in Singapore.

2 Singaporeans have for many years been enjoying modern sanitation and this has contributed to our high standards of environmental health.

We are taking a significant step forward with the implementation of the DTSS.

To be built at a cost of about \$7 billion, it will meet the needs of Singapore's increasing population and expanding economy through the 21st century.

3 The DTSS is a long-term project to be built in 2 phases over the next 15 years.

Phase I will begin operation in 2008 and phase 2 in 2015.

The DTSS will transform the management of wastewater in Singapore.

4 Deep tunnel sewers will be used to convey sewage flows by gravity, doing away with intermediate sewage pumping stations.

There are 139 pumping stations at present located all over Singapore.

The existing six sewage treatment works and associated pumping facilities will be gradually phased out when they reach the end of their economic lifespans.

Eventually all sewage flows will be treated at only two centralised sewage treatment works located at the southeast and southwest corners of Singapore in areas zoned for industrial use.

5 Today, we are here for the ground-breaking ceremony of the Kranji Tunnel, which forms part of the North Tunnel.

The DTSS tunnels will comprise the North Tunnel, the South Tunnel and a Spur Tunnel linking the two.

When completed in about 5 years, the North Tunnel and Changi outfall will enable the discharge of treated effluent from the Kranji, Seletar and Kim Chuan treatment works to be diverted from the Straits of Johore to the deep waters of the Singapore Straits.

This will improve the water quality in the Straits of Johore and make the north-east shore

of Singapore more attractive for waterfront development and activities.

As the deep waters south of Singapore are fast moving, there will be very little impact on the water quality.

6 The North Tunnel will be constructed under 5 Design and Build contracts.

The tunnel will comprise of about 38 km of large diameter sewer, ranging from 3.6 m to 6.0 m diameter at a depth ranging from 18 to 50 m.

The Spur Tunnel will be a 10 km sewer of 3.3 m diameter to be built under the 6th contract.

7 All six contracts have been awarded between Dec 1999 and March 2000 at a total cost of \$550 m.

The project has attracted very keen interest from both local and foreign contractors and design consultants.

As the region was still recovering from the Asian financial crisis and there is excess capacity for construction work, we have been able to attract highly competitive bids, resulting in significant cost savings from previous estimates.

Three of the contracts have been won by joint ventures involving local contractors.

8 Under phase 1, the North Tunnel and the Spur Tunnel will be completed before the Changi Wastewater Treatment Works which will be operational by 2008.

Initially this plant will cater for additional flows and be expanded to take over from existing plants as they reach the end of their economic lifespans.

Phase 2 of the DTSS will be implemented after 2008 to comprise the South Tunnel and the Treatment works at Tuas.

9 Land is a scarce and precious resource in Singapore.

The existing sewage treatment works and pumping stations occupy a total land area of 290 ha.

In addition the 200m buffer zone restricts development in another 700 ha of land.

The total land area of 990 ha is equivalent to that of 2 Yishun New Towns.

When these sewage treatment facilities are eventually all phased out, we will be left with only the 2 large wastewater works at Changi and Tuas occupying a total of 110 ha.

The resulting savings and enhancement in land value were estimated in 1998 at \$1.5 billion.

10 If the Government had decided not to proceed with the DTSS, the existing treatment facilities would still have to be replaced when worn out and expanded to cope with increasing volume of wastewater.

Comparing the capital and operating costs of that system with the DTSS, the savings of the DTSS were then estimated at \$3.7 billion.

The total savings from both land and facilities were thus estimated at \$5.2 billion, a very substantial saving for Singapore.

11 I am very happy to be here for this ground-breaking ceremony.

May I wish everyone involved in the DTSS all success for the smooth implementation and completion of the project.

Ministry of the Environment

National Archives of Singapore