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DEEP TUNNEL SEWERAGE SYSTEM (DTSS)

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The Deep Tunnel Sewerage System is a mega infrastructure project aimed to meet Singapore's needs through the 21st century. This new wastewater conveyance, treatment and disposal system will eventually replace the existing system consisting of 6 sewage treatment works (STWs), one sludge treatment works and 139 pumping stations located at various parts of Singapore.

The concept of the DTSS is to use link sewers to intercept flows from existing sewers upstream of the existing STWs. These flows will be channeled by gravity via deep tunnels to 2 centralised wastewater treatment plants strategically located at the southern coastal areas, with the treated effluent discharged through deep sea outfalls.

The DTSS comprises of 4 components: (1) North and South Tunnels; (2) new wastewater treatment plants at Changi and Tuas areas; (3) deep sea outfalls; and (4) link sewer network .

The entire DTSS project will be developed in 2 phases over the next 20 years. Currently, Phase I is being implemented. This Phase consists of the construction of the North Tunnel System of deep sewers, the associated link sewers, the Changi Wastewater Treatment Plant and deep sea outfalls.

Six design-and-build contracts were awarded between Nov 1999 and Mar 2000 for the North Tunnel System, namely Contract T-01 Changi Tunnel, T-02 Bedok Tunnel, T-03 Paya Lebar Tunnel, T-04 Ang Mo Kio Tunnel, T-05 Kranji Tunnel and T-06 Queensway Tunnel. Detailed design for the Changi Wastewater Treatment Plant, outfalls and link sewer network is in progress. Tenders for the foundation works, site development and management for the Changi Wastewater Treatment Plant has been called and expected to commence work in April 2001.

The DTSS Phase I is scheduled for completion by 2008.

Background Information For Media

DTSS Contract T- 04 (Ang Mo Kio Tunnel) Detailed Information

The Deep Tunnel Sewerage System (DTSS) Contract T-04 Ang Mo Kio Tunnel was awarded to M/s Samsung Corporation at a sum of \$74.2 million in Feb 2000. The contract period is 49 months and will end in Mar 2004.

The Ang Mo Kio Tunnel which has a finished diameter of 4.3m is 7.3km long. The tunnel starts at a work shaft which is located within the Mindef training area off Yio Chu Kang Road (near exit to Seletar Expressway), traverses along the Seletar Expressway, Central Expressway (CTE) and ends at the intersection of CTE and Braddell Road. The soil stratum underlying the Ang Mo Kio Tunnel will be old alluvium along most sections of the route.

Samsung Corporation is an international contractor with extensive tunnelling experience. The firm has recently completed the Contract 703 of the MRT North East Line.

Under the Contract T-04, a tunnel boring machine (TBM) which is manufactured by Mitsubishi Heavy Industries, Japan, will be used. The modern TBM which weighs 400 tonne carries an on-board computer system and a gyro guidance system that will allow full and real-time monitoring of the tunnel advances as well as to provide guidance for the tunnel drive and the tracking of the alignment. The actual operation and control of the advance rate made by the TBM is being monitored continuously.

Tunnelling will be carried out continuously over 24 hours per day, 7 days per week and is targeted for completion in Feb 2003.

The tunnel will have precast concrete segments which will be erected simultaneously with the tunnel drive. The segments will form the initial ground support of the tunnel. After completion of the TBM drive, a cast-in-place concrete inner lining with a corrosion protection membrane will be built.

Apart from the main work shaft, Samsung will also design and construct 5 more shafts, odour control facilities and the lateral tunnel.

The progress of the preparatory works has been good and ENV is confident that the project will be completed on schedule.

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