



February 2007

## Media Backgrounder

### Note to Media:

**A CD of a similar project in the U.S. which uses the Earth Pressure Balance (EPB) technology is available to view on request**

## Earth Pressure Balance Tunnel Boring Machine

The preferred route for a key York Durham Sewage System (YDSS) Interceptor sewer that outscored nine alternative routes is employing the most recent advances in tunnelling technology. Two Earth Pressure Balance Tunnel Boring Machines (EPB TBM) are to be used on the Interceptor sewer – designed to go along 19<sup>th</sup> Avenue between Yonge Street and Leslie Street and a portion of Leslie Street in Richmond Hill.

The EPB excavation mode provides continuous support to the tunnel face by balancing the earth pressure against the forward pressure of the machine. The soil excavated by the cutting head is accumulated under pressure in the cutting head chamber and is then excavated by a rotating conveyor. As the tunnel is being mined by the EPB TBM, the segmented concrete sewer liner is continuously constructed into rings within the tail shield of the machine. As the machine moves forward, the rings are grouted in place. This eliminates the need to re-visit the tunnel for secondary construction making it a one-pass system.

What makes the EPB TBM technology significant to York Region's Interceptor project is its ability to work through almost all soil conditions, most notably water-bearing soil. Conventional tunnelling techniques require dry soil conditions and therefore dewatering is necessary in order to complete construction. Similarly, ground water isolation, sealed shaft construction methods virtually eliminate the need to dewater for shaft construction. A key feature of the EPB TBM is that localized dewatering is required only at access shafts or in the emergency event that the TBM face needs to be accessed if a boulder, which cannot be cut by the machine, is encountered. Dewatering would take place while the obstruction is being removed.

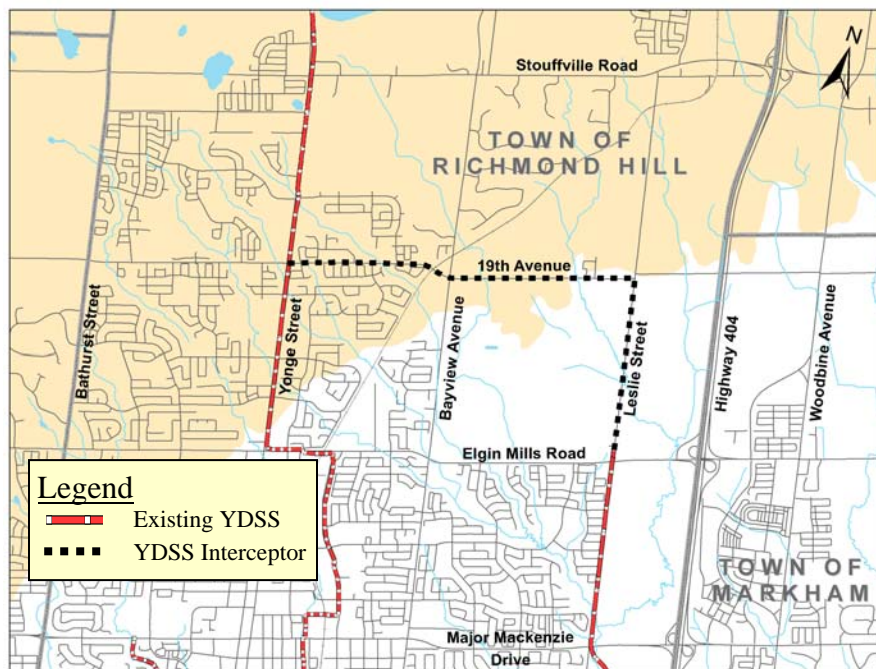
Sewer construction in tunnel has the advantage of reduced impacts on surface features (i.e. roads, trees, sidewalks), traffic access to businesses and properties and, where applicable, on wildlife, aquatic habitat and vegetation. It also permits crossing underground utilities and structures without disturbing them.

### Application:

- Tunnelling operation averages 1.7 metres per hour
- EPB TBM will install 4.1 km of sewer along 19<sup>th</sup> Avenue and a short distance south on Leslie Street
- EPB TBM is capable of excavating through almost all ground conditions without the need to dewater or lower the ground water table

## Project Description:

The Interceptor project is comprised of 4.1 km of sewer constructed in tunnel using two Earth Pressure Balance Tunnel Boring Machines and 1.6 km of sewer constructed using conventional open cut methods.



## Overall Cost:

Both contracts (open cut & tunnel) to construct the YDSS Interceptor sewer total a bid capital cost of \$76.9 million.

## Project Status:

- Peer Review complete
- Alternative Routes assessment and Peer Review filed on public record
- Permit To Take Water (PTTW) application and supporting documentation submitted to the Peer Review Team, review complete
- Public Consultation Centre on the PTTW application and supporting documentation held on December 8, 2005
- PTTW application and supporting Environmental Management Plan submitted to the Ministry of the Environment (MOE) March 2006
- PTTW granted July 2006
- Leslie Street open cut construction contract to be complete February 2007
- Currently the tunnel contractor is constructing two of the five shafts, with tunnelling expected to begin early February 2007
- Environmental Management Plan Awareness and Compliance Training (EMPACT) for all contractors working on the Interceptor project was initiated

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For more information, the media should visit the York Region Web site: [www.york.ca](http://www.york.ca) or contact:  
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