



## NI Water Belfast Sewer Stormwater Management – Project Update.



Following the completion of the first phase [May 13, 2008 Vol.9,No. 11] of the NI Water Belfast Sewer Stormwater Management Works project, the joint venture between Morgan and Farrans has reported that the LOVAT RME185SE has commenced work on the second phase of the project.

The Mixed Face, Earth Pressure Balance TBM is currently 156 metres into its 2.2 kilometre drive towards shaft 7 situated in the heart of Belfast City Centre. The TBM will also pass through two large diameter pre-constructed shafts along this route. The team is currently preparing to stop the machine and begin to install the pit bottom crossing behind the TBM.

On average, the 4.7 meter diameter TBM is mucking and building twelve 4 metre diameter, 1.2m long rings per shift, with average mining times of 20 minutes and ring assembly times of 15 minutes. It is anticipated that progress will increase to 18-19 rings per shift once the crossing is installed at the shaft bottom. Best daily and weekly production rates to date are 19 rings and 138 rings respectively.

The TBM is currently progressing well through a stratum of upper boulder clay, but further into the drive a mixed face of clay, sandstone and malone sand is expected. Dolerite dyke intrusions are also anticipated, which may require replacing the rippers with disc cutters.

The primary obstacles during this portion of the drive are structures the tunnel will pass under and the close proximity of city centre buildings. The more notable of these are the M3 motorway, rail bridges and the adjacent historic Sinclair Seamen's Mission Church, which rests on timber piled foundations. The drive then progresses along the line of Victoria Street, one of the city's main thoroughfares, passing Banks, hotels, a major department store, government buildings and the Belfast Telephone Exchange. It also passes close to the Albert Clock Tower which has already been underpinned in an attempt to restrict the lean attributable to poor foundation construction.

The TBM is expected to breakthrough at the end of 2008.