KEY POINTS

- Describe project
- Project use and benefits
- Technical issues and innovations
- Social problems/policy challenges
DESCRIPTION

- Stormwater Management And Road Tunnel
- 13.2m diameter tunnel consists of a 9.7 km stormwater bypass tunnel and a 4.0 km motorway.
- First multi-functioning tunnel in the world
- Total cost approximately $514 million
PROJECT USE & BENEFITS

- Main purpose to divert floodwaters and prevent spillover into communities near the Jalan Tun Perak Bridge
- Reduces traffic congestion during rush hour
- Motorists reduce travel times between Jalan Istana Interchange and Kampung Pandan from 15 min to 4 min
Technical Issues & Innovations

- First combined storm and traffic tunnel in the world
- The motorway tunnel is suitable for **light vehicles** only. **No motorcycles and heavy vehicles**
- Located 20m below city
- Use of biggest TBM
- Use of special TBM for soft grounds
- Built pre-cast slabs for highways
- Safety $\rightarrow$ shaft/km & connect road decks /250m
- State-of-the-art operations control room
- No straight tunneling line
- Unpredictable grounds. Highly erratic karstic features
  - Probe ground in front of TBM
  - Use of liquid concrete
Social Problems/Policy Changes

- Ideal path: straight line.
- Local property law: property extends to the center of earth.
- Tunnel right: will cost millions of dollars to buy.
- Solution: the tunnel follows streets and highways already owned by the City.
Social Problems/Policy Changes

- Construction challenges due to non-straight path:
  - The TBM has to follow the precisely defined path.
  - SMART requires a series of sharp bends.
  - Turning the 4 story high drill 20m under ground is not easy.
Social Problems/Policy Changes

- Tunnel Safety: Fire

- Safety is a key focus of the SMART design.

- SMART safety team was tested with two colliding cars resulted in tunnel fire on April 5, 2007.
THANK YOU!