DUBLIN PORT TUNNEL
Safety Features

The following features contribute to the overall safety of the Dublin Port Tunnel.

Operational Aspects

- Tunnel operations controlled and monitored from dedicated control centre adjacent to the Tunnel, 24 hours per day, 365 days per year.
- Incident response procedures developed in conjunction with emergency services and other relevant parties
- Trained Operators implementing planned responses to any incidents that arise and regular training for all operations staff, including simulated incidents and joint exercises with emergency services
- On site specialist fire tender and crew with training in Tunnel environment
- On site Garda Traffic Corp and breakdown vehicle
- Operator patrols the Tunnel to ensure freeflow of traffic

Safety Features of the Tunnel Civil and Structural Design and Layout

- There are two separate 'tubes' with one way traffic only, eliminating risk of head on collisions
- 19 Pedestrian cross connections between tubes (every 250 metres) fitted with fire doors, used for evacuation of an incident tube and for emergency services access to the scene of an incident
- Vehicle cross connections provided at four locations (every 1km) and fitted with fire doors, used to facilitate evacuation and access by emergency services. Vehicle lay-bys at these locations providing refuge for broken down vehicles, recovery and maintenance vehicles
- Emergency walkway adjacent to each side of the carriageway in both tubes
- Fire fighting points every 65m
- 38 Emergency Phones at approx 250 metre intervals providing emergency telephone link directly to operator
- Highest quality fire retardant materials used throughout to minimise the outbreak or propagation of fire. The Tunnel structure is designed to withstand a 100 Mega Watt fire for two hours

Mechanical and Electrical Systems

Communications

- Methods of communication with drivers in the Tunnel:
    - Emergency phone link direct to Operator
    - Loud speaker system to instruct users
    - 100 CCTV covering every angle and area of Tunnel
    - Variable message signs giving instruction
    - Break-in FM radio, Operator can speak directly to tunnel users

- 3 internal radio communication system incorporating 10 channels
    - Operational radio system between Operator and employees, (PABX)
    - Emergency radio system with dedicated channels for Gardai, Fire Brigade, Emergency Services, etc
    - Public FM radio break-in system to allow car radios to receive selected stations in the Tunnel. Break in facility to allow messages to be given to motorists as part of planned response to incidents

Traffic Management

- 100 closed circuit television system to allow tunnel operators to monitor the facility, detect incidents visually and assess the nature and severity of incidents
- Traffic control system with defined plans covering wide range of traffic conditions expected. Includes plans to close either or both tubes as may be required from time to time for maintenance or in response to incidents. Control strategies integrated with those for the City Centre and adjacent motorways
- Traffic monitoring system to detect abnormal flows such as e.g. vehicle stopped or slow movement of traffic. Automated alarm systems when pedestrian appears in Tunnel or emergency door opened
- Over height vehicle detection at 7 locations on approaches linked to Viariable Message Signs to protect against damage to tunnel portals or installed equipment

Electrical

- Two independent high voltage supplies directly from the National Grid each capable of powering the Tunnel systems independently

- Essential services supported by standby generators which start automatically on failure of incoming supply and can operate for 24 hours without refuelling

- In the event of supply failure from ESB and back up generator, critical services supported by uninterruptible (no break) supplies for 60 minutes

- Tunnel lighting censored to provide for transition from external to internal lighting levels and vice versa. (i.e. Aids adjustment to night vision)

- The ventilation system using 16 jet fans is capable of changing the air in the Tunnel within minutes , it is used to maintain air quality during normal operations and control smoke in the event of a fire

Fire Prevention Systems

- Comprehensive fire detection by linear heat detectors, optical smoke detectors and break glass alarms at various locations in the Tunnel and operations buildings

- Pressurised fire hydrant system and hose reel locations (every 65m) ensure full coverage and overlap of areas within Tunnel. Dedicated on-site water reservoir to ensure adequate supplies available for fire fighting

- Extensive central drainage system to collect all liquids and convey to the sump(tanks) from where it is discharged by pumping. The sump has Gas sampling and foam extinguishing systems to neutralise any flamable liquids and reduce risk of explosion/ fire