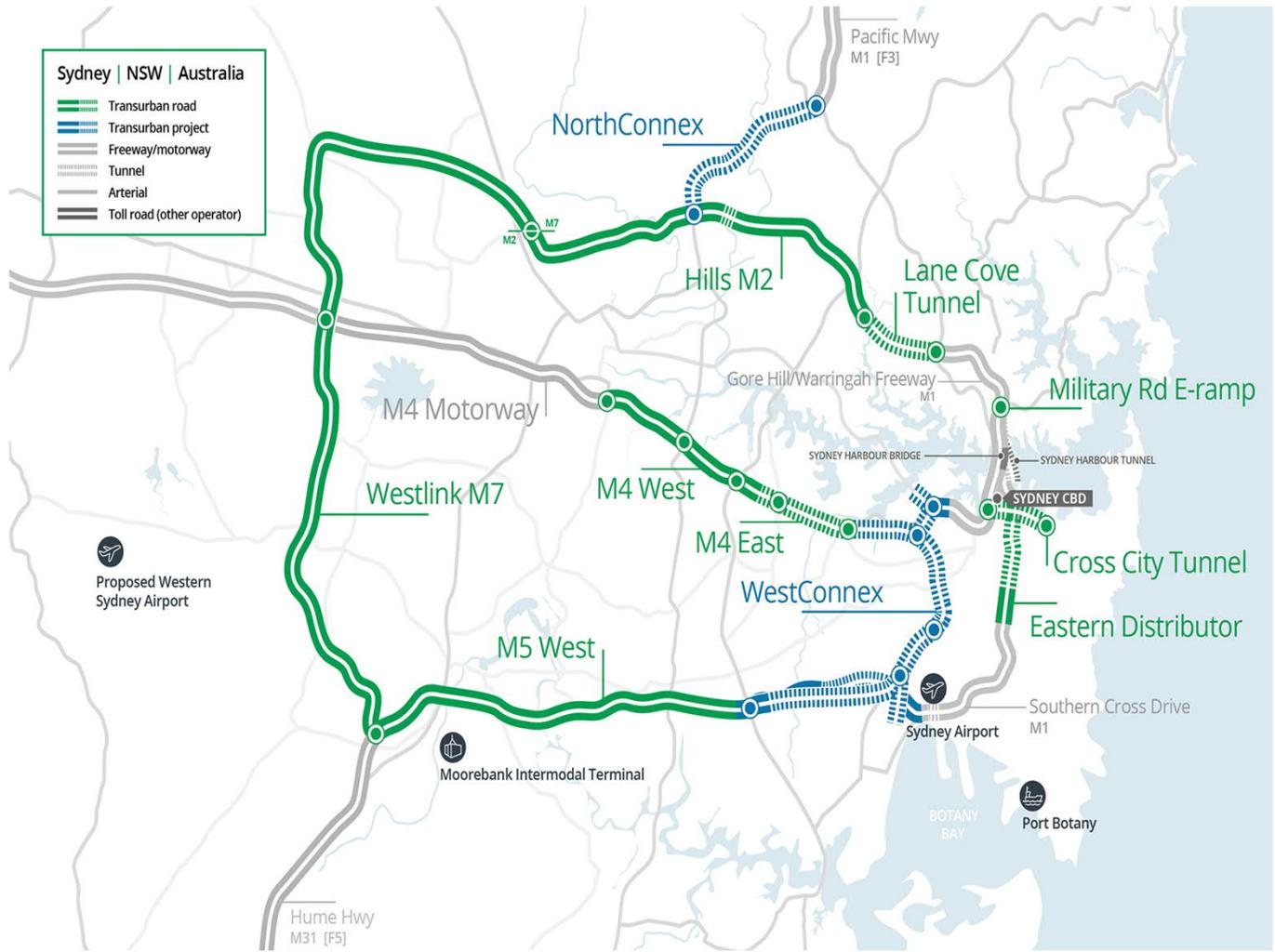




**FIRE +
RESCUE**

Operational Considerations for firefighting in tunnels

COMMUNITY SAFETY DIRECTORATE



Westconnex (3 stages) and Northconnex



Western Harbour, Beaches Link, Rozelle Interchange

Fire Safety Systems in Tunnels

Water Supply

- ❖ Dual water supply in the form of water storage tanks at both ends.
- ❖ Four hour water supply for the hydrant system based on 3 hydrants operating simultaneously at 10L/sec (total 30L/sec).
- ❖ Dual Hydrant valves spaced at 60m intervals are located throughout the tunnel
- ❖ Two hour water supply for the deluge system. 60m deluge zones.
- ❖ Drainage sump suppression system discharges for 15 minutes.



Fire Safety Systems in Tunnels

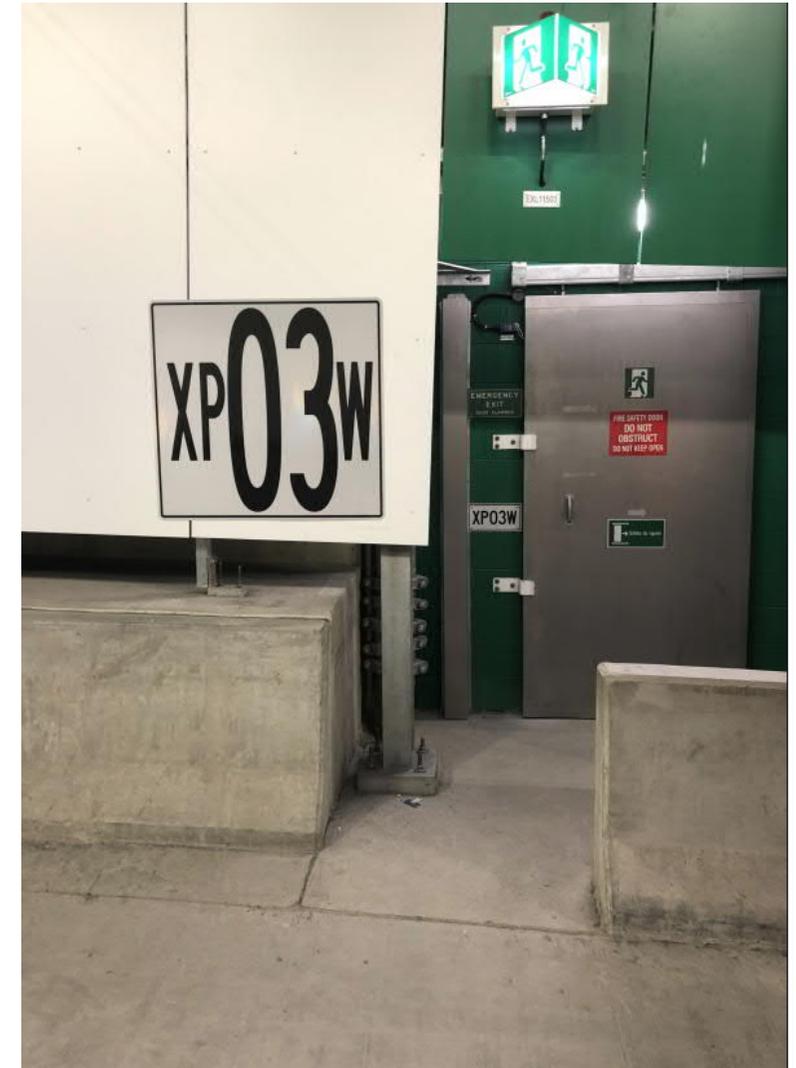
Emergency Access and Egress

- ❖ The main carriageway contains cross passages that are located at intervals not exceeding 120m.
- ❖ Emergency egress will be provided along ramps by longitudinal passages (LEP's).
- ❖ Both cross passages and LEP's are provided with independent air pressurisation systems.



Fire Safety Systems in Tunnels

- ❖ Where LEP's are provided, additional FRNSW access cross passages shall be provided such that a maximum distance from the non incident tunnel entry point to an incident in an adjoining tunnel does not exceed 240m.
- ❖ Vehicle Cross Passages are provided to enable turning of an Austroads single unit truck / bus from either tunnel carriageway.



Fire Safety Systems in Tunnels

Fire and Incident Detection

- ❖ Linear heat detection in the form of fibre optical cable provides full coverage to the carriageways and ramps. This is zoned to match the zones of the deluge system.
- ❖ Addressable point type photoelectric smoke detectors are provided in cross passages, longitudinal egress passages (LEP's), FRNSW passages and underground plant areas.
- ❖ Automatic Video Incident Detection System (AVIDS) throughout tunnels and ramps. Will alert MCC operator to traffic incident, stopped traffic, detection of smoke and changes in traffic flow pattern.



Fire Safety Systems in Tunnels

- ❖ Closed Circuit Television (CCTV) system is installed within the carriageways and ramps
- ❖ All doorways to cross passages and LEP's are monitored.
- ❖ All emergency services equipment cabinets are monitored.

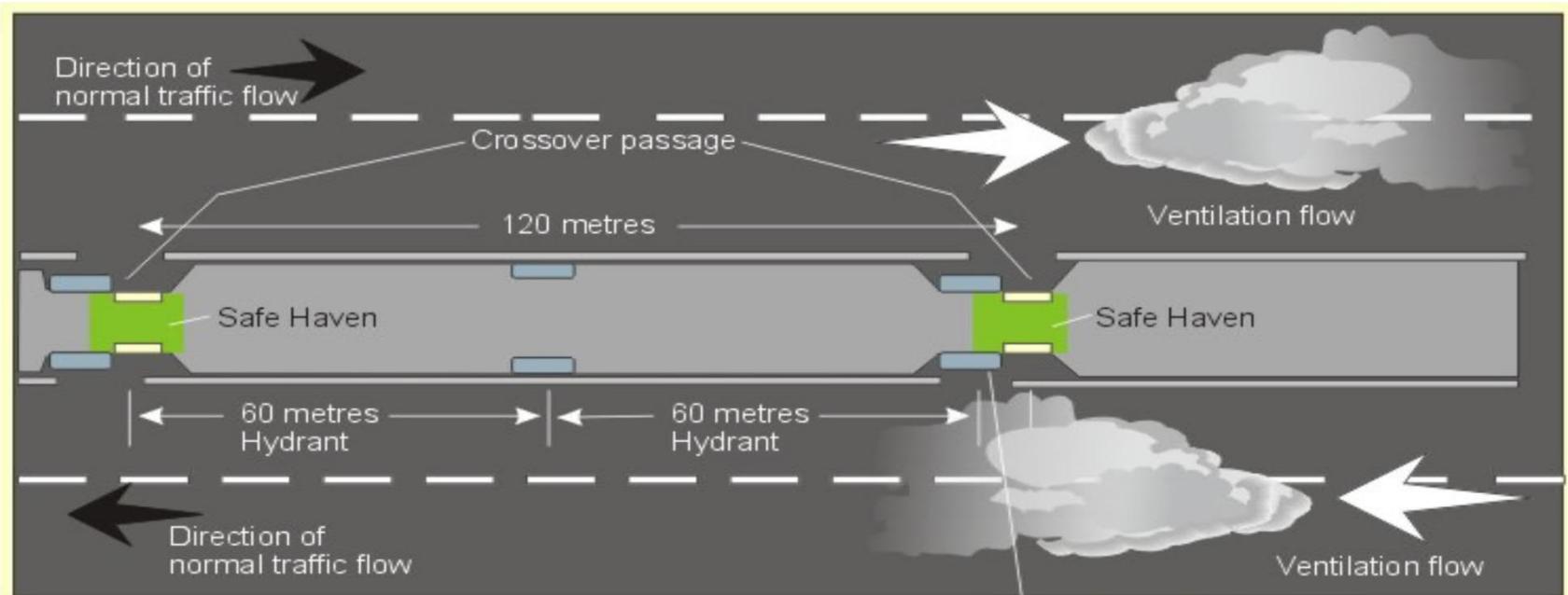


Fire Safety Systems in Tunnels

Emergency Ventilation

- ❖ The carriageways are served by longitudinal ventilation system using overhead jet fans.
- ❖ The system provides unidirectional airflow in the direction of traffic movement during normal operation. Note there are some exceptions in locations near the portal where direction may be against traffic movement to limit portal emissions.
- ❖ Smoke is exhausted via the main carriageway through smoke extraction shafts.





- Hydrant cabinet containing:
- hydrant,
 - hose reel
 - fire extinguisher and
 - firefighting phone



Emergency Equipment Points

- ❖ FRNSW emergency equipment points (FEEP) are located on the tunnel wall adjacent to each emergency egress door, and at the midpoint between emergency egress passages.



Emergency Equipment Points

- ❖ A motorist emergency equipment point (MEEP) is installed on the tunnel wall opposite each FRNSW emergency equipment point.



FRNSW response to tunnel incidents.

Types of incidents

- ❖ Fire involving one or more vehicles, including spilled fuel
- ❖ Hazmat incidents
- ❖ Motor vehicle accident, persons trapped
- ❖ Tunnel collapse, flooding or any other incident that requires the attendance of the NSWFB



FRNSW response to tunnel incidents.

Initial response to road tunnel incidents

- ❖ '000' calls and direct contact via the tunnel control centre.
- ❖ Identifying the location and nature of incident is critical so that the appropriate response can be initiated,
- ❖ Zone commander or closest fire appliance will respond directly to the Tunnel Control Centre.
- ❖ Fire appliances will report to predetermined staging areas close to the portal entries.



FRNSW response to tunnel incidents.

Initial response to road tunnel incidents

- ❖ Either the Zone Commander or Station Officer is to take control of the incident and assume the role of incident controller (IC)
- ❖ The IC will liaise with the Tunnel Control operators. The operators will play a vital role in assisting FRNSW formulate an incident action plan.
- ❖ The IC will implement Incident Control Systems (ICS)



FRNSW response to tunnel incidents.

Initial response to road tunnel incidents

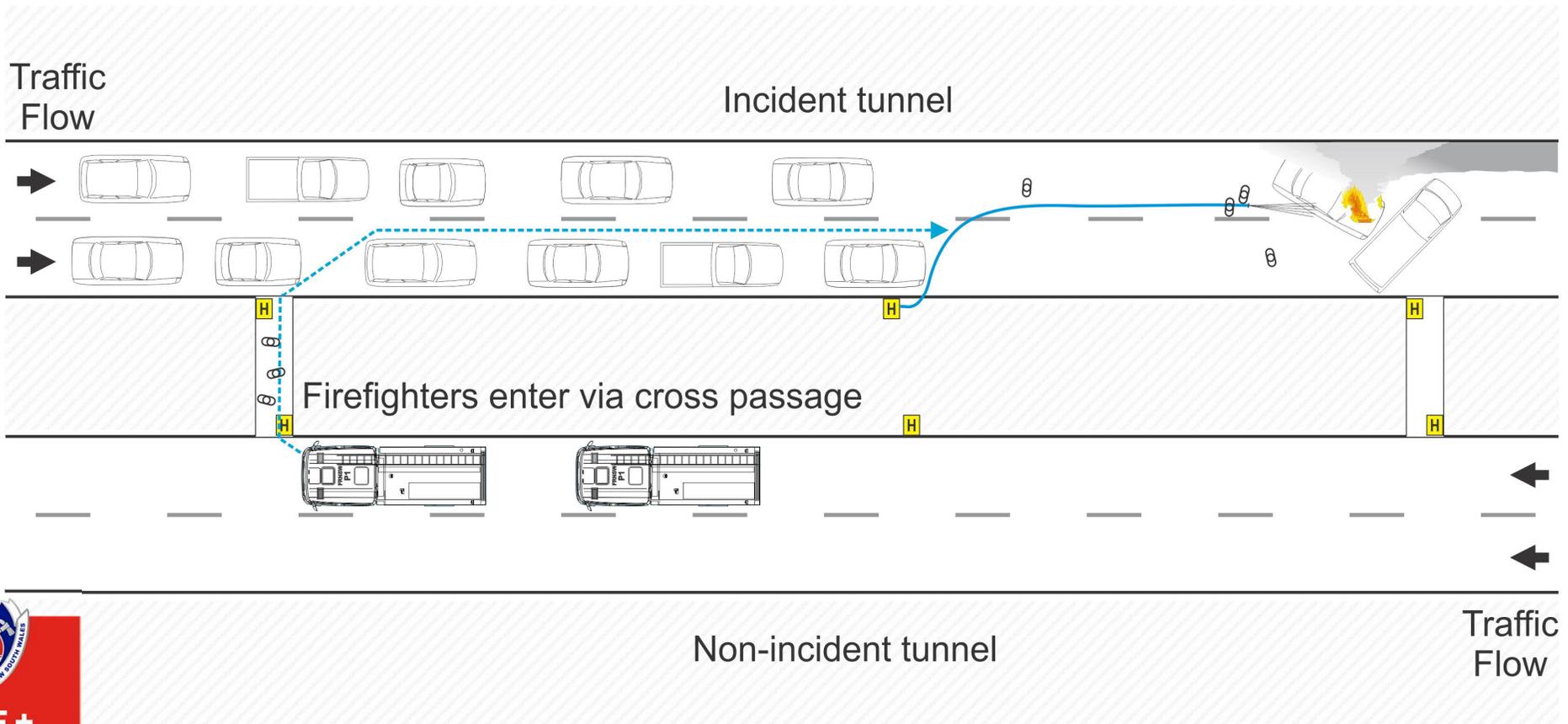
❖ Size up considerations:

- TCC emergency procedures and FRNSW pre incident plans
- Type of incident
- Number of vehicles and people in the tunnel
- Exact location of the incident and most efficient means of access
- Operation and effectiveness of installed fire protection
- What procedures, evacuations have been implemented

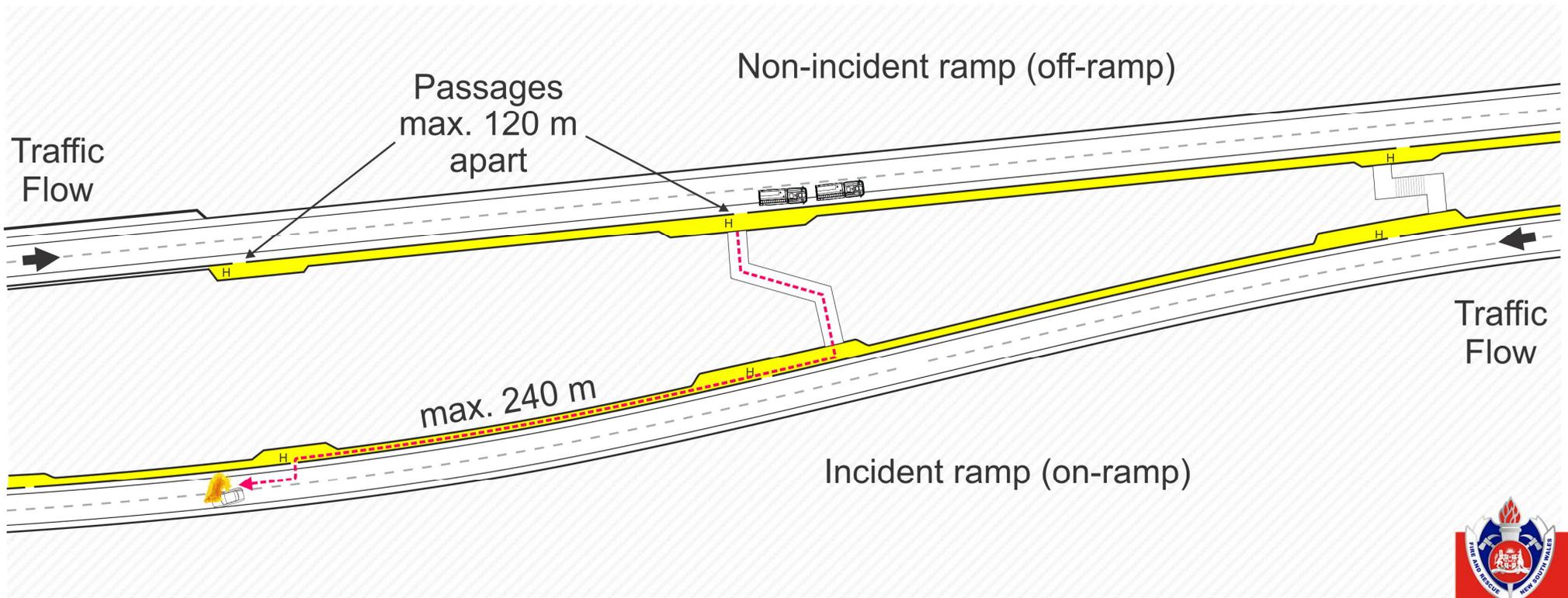
❖ The IC must ensure that firefighters are able to access the incident safely and with a minimum of delay.



FRNSW access incident via cross passage



Access via longitudinal egress passage (LEP)



THANK YOU

