

Annex 8C

Summary of Modelling Assumptions

Table C1a

Hazard Assessment - Summary of Modelling Assumptions

Route 16 Project Phase		Modelling Assumptions	
Mitigation Option	Description		
Operation	A	Enclosure of the road	For this case the population associated with the tunnel is 'relocated' to the portal of the enclosure.
	B	Modification of Tai Po Road WTW to facilitate using 50kg cylinders	The modelling assumptions for this case are as per the 1995 Hazard Assessment of Tai Po Road WTW, ie the WTW is modelled with the same storage quantity/throughput of chlorine but with 50kg cylinders instead of 1 tonne drums. Unloading is assumed to take place outdoors (as per the existing plant).
	C	Provision of a new chlorine building at Tai Po Road WTW	The modelling assumptions for this case are as per the 1995 Hazard Assessment of Tai Po Road WTW, ie unloading is assumed to take place indoors and the store is considered capable of withstanding the pressure pulse generated by an internal 1 tonne drum rupture.
Construction	A	Operational restrictions at Tai Po Road WTW	The drum stock at Tai Po Road WTW is assumed to be reduced from 4 drums to 3 drums, 2 of which are 'on-line' (one for pre-chlorination, the other for post-chlorination). However with the adoption of a 'just in time' delivery practice, the standby drum will only be present 60% of the time.
	B1	Temporary enclosure of truck unloading area	Leaks arising due to accidents associated with truck manoeuvring and unloading are modelled as internal releases rather than external releases. The temporary enclosure is assumed to be a well-sealed, ventilated structure with chlorine leak detectors/alarms, which automatically shutdown the ventilation system. The doors of the enclosure are assumed to be alarmed in a similar manner to the doors of the chlorine store itself. The enclosure is not considered capable of withstanding an internal 1 tonne drum rupture.
	B2	Suspension of construction activities during loading and unloading of chlorine	Workers are assumed to relocate either inside the toxic refuges or to a distance of at least 500m from the chlorine store at Tai Po Road WTW, such that the risk associated with the on-site transport and loading/unloading of chlorine containers is negligible.

Route 16 Project Phase	Mitigation Option	Description	Modelling Assumptions
C	Provision of a chlorine barrier as well as an off-site alarm, toxic refuges and breathing apparatus	<p>The chlorine barrier is assumed to achieve a reduction in near-field chlorine concentrations of a factor of 5 for external releases. This transforms the LD90 contour (2400ppm for 10 minutes) to the LD50 contour (500ppm for 10 min).</p> <p>No reduction in concentration is assumed for the far-field (ie distances beyond the LD90 contour). Similarly, for internal releases of chlorine which escape as vapour via door seals, louvres etc, no reduction in concentration is considered to be achieved by the barrier.</p> <p>The provision of an off-site alarm, toxic refuges and breathing apparatus is considered to increase the likelihood of successful escape of workers on the Route 16 construction site from 20% to 50% (within LD50 contour) and from 80% to 95% (within the LD03 contour).</p>	<p>This is modelled simply by adjusting the population data in the RISKPLOT input file and/or the time periods for which construction workers are assumed to be present.</p>
D	Restriction of number of construction workers and/or working hours		