

LPG Tank Installations

Approval level: Fire Safety
First issued: April 1993
Review date: September 2017
Version number: 6

Guideline No. 05

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Sponsor: Dangerous Goods

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1. PURPOSE

This guideline has been formulated to provide fire protection recommendations for LPG installations. This guideline will deal with tank installations only.

2. SCOPE

These guidelines are based on the storage capacity and the ability to control a situation before it affects or impinges on the tank installation. Where existing protection systems are provided on-site, as a result of building regulations or other regulatory requirements, the duplication of fire protection services is not required. Installations of special risk or hazard may require additional fire protection facilities.

3. ISSUES

3.1 DOMESTIC TANKS

For a single tank of 8kL or less, where there is a basic tap water supply for any adjacent structure that is capable of operating a garden hose, such a water facility is considered adequate for minor fire risks in the vicinity of tank. A garden hose, capable of reaching at least five metres past the tank installation, is to be attached to, or available, for this basic tap water supply.

Where there is no structure, the installation will be deemed as low risk and will not require installed equipment.

Note: a building that is less than three times the minimum separation distance from the tank (see Table 6.1, Australian Standard 1596) will be considered adjacent.

Note: domestic tank installations do not pose a great problem, in that:

- they are connected directly to appliances serving the building
- they are predominately liquid fill into the vapour space and vapour withdrawal
- contact with the tank is infrequent, i.e. contact usually only occurs during tank filling and the vehicle transferring the gas is equipped with suitable portable fire extinguishers, which is considered adequate in these circumstances.

3.1 ABOVE GROUND COMMERCIAL STORAGE TANKS

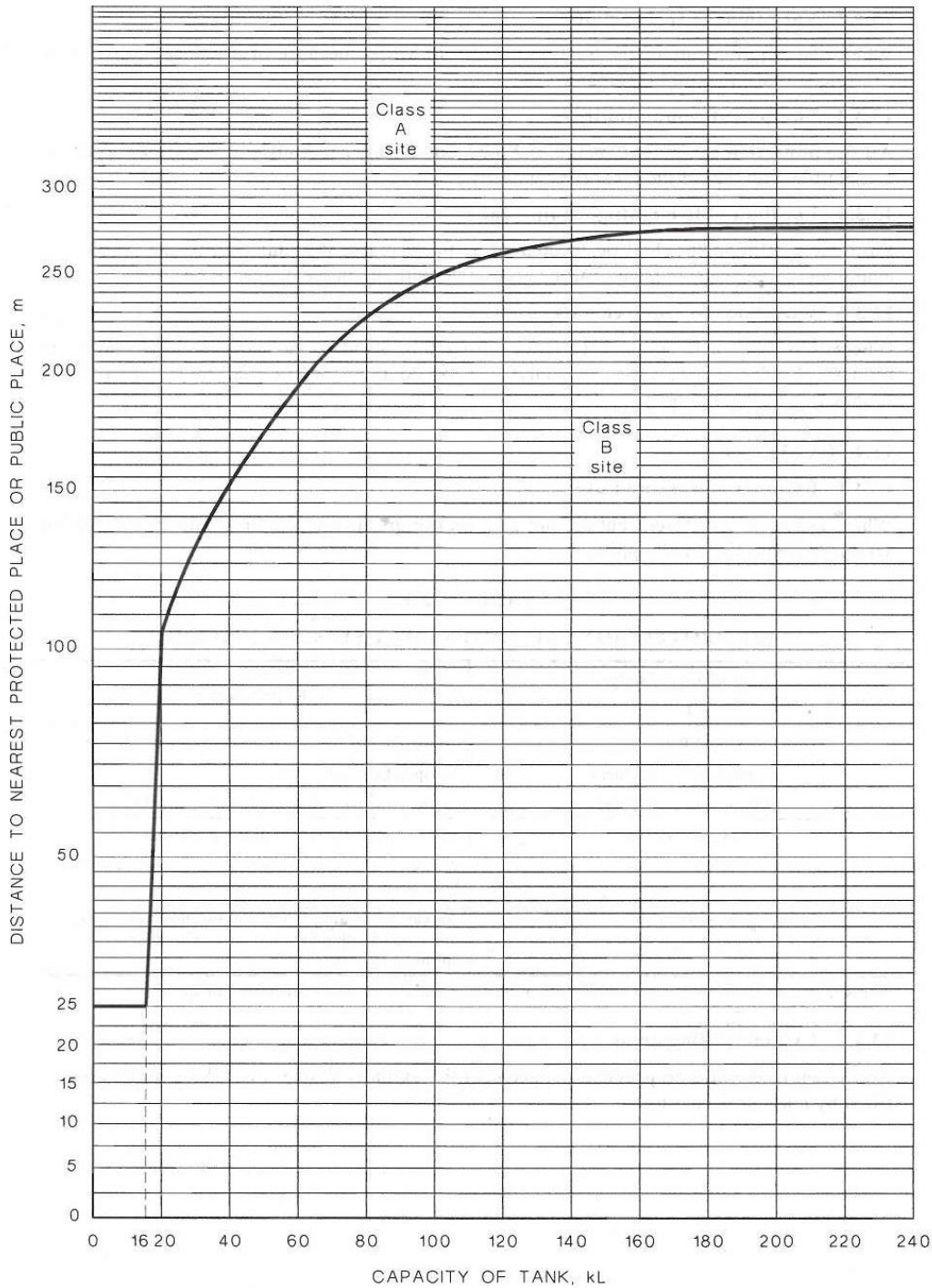


FIGURE 13.1 SELECTION CHART

Figure 13.1 (shown above) of A.S. 1596 details sites that require fire protection by the tank size and separation distance. Those sites that are classified as a Class A site do not need mandatory fire protection all other sites (Class B) will require a level of fire protection.

Note: Figure 13.1 is based on thermal radiation. A complete assessment of the installation should be undertaken before the class of site (A or B) is determined. This guideline will deal primarily with Class B sites.

Tank installations with a storage capacity of up to 2.5kL

Install portable fire extinguishers in accordance with the provisions of AS 1596, Section 13.7.5 as follows:

- a minimum of one (1) 2A60B (E) dry powder type portable fire extinguisher.

Tank installations with a storage capacity of 2.5kL up to and including 8kL

Install portable fire extinguishers in accordance with the provisions of AS 1596 as follows:

Two (2) 2A60B (E) dry powder portable fire extinguishers:

- one to be located adjacent to the tank
- one to be located at the dispensing point of the vessel.

Note: where the tank and the dispensing point are within 10 metres of each other, one extinguisher will suffice, provided it is visible and accessible from both locations.

Tank installations with a storage capacity of 8kL up to and including 50kL

Comply with the requirements for storage tanks of less than 8kL capacity.

Provide portable fire extinguishers and install fire hose reels with jet/spray nozzle in accordance with the following:

- The location and number of hose reels shall be sufficient to ensure the hose nozzle will extend at least five metres beyond all sides of the tank and tanker standing areas;
- If required, any static water supply shall be sufficient to provide the required pressure and flow for a period of no less than 15 minutes;
- Fire hose reels must comply with Australian Standards 1221 (1997) and 2441 (2008);
- Fire main water supply must provide adequate pressures and flows unless equivalent safety features have been installed to mitigate the risks, the minimum flow pressure must be 220kPa @ 0.55l/s;
- Combined domestic and fire mains are permitted, however valves and plumbing should be so designed as to allow for the operation of fire services should domestic supplies need to be isolated (refer to BCA-20056 E1.4 and Figure E1.4);
- Maintain the hose reel installation in accordance with the provisions of AS 1851.2; and
- Any required pump sets for hose reels only are to comply with Section 6 of AS 2941.

For a single tank installation of up to 16kL, a portable fire extinguisher may be substituted where a water supply is not readily available. The fire service should be consulted prior to this being implemented, as per Regulations 54 and 55 of the Dangerous Goods Regulations.

Storage tanks of a capacity greater than 50kL

Comply with the requirements for storage tanks of less than 50kL capacity.

Provide portable fire extinguishers and fire hose reels.

Assess the heat protection requirement (Appendix M of AS 1596) for the threat, in accordance with Clause 13.5.2.

Tank installations with a storage capacity exceeding 50kLs (which does not require heat protection)

Comply with the requirements for storage tanks of capacity of less than 50kL.

Provide portable fire extinguishers (ensure that all tanker unloading areas, dispensing points and tank areas have coverage) and fire hose reels.

Provide a hydrant system in accordance with the provisions of 13.7.1 as supplementary protection.

Major installations with a storage capacity greater than 300kL

Where the aggregate capacity of a tank installation exceeds 30kL, the firefighting facilities for the installation shall be determined from a specific site assessment and in consultation with the Fire Rescue Victoria (FRV) Dangerous Goods Department. Use of a risk analysis report should be considered for these applications.

Note: a facility with more than 200 tonne of LPG is a **major hazard facility** in accordance with Part 5 of the Occupational Health and Safety Regulations.

3.3 REQUIREMENTS FOR UNDERGROUND STORAGE TANKS

Provide 2A60B (E) dry powder portable fire extinguishers so as to provide coverage for dispensing points and tanker unloading areas.

3.4 AUTOMOTIVE FILLING STATIONS

Service Stations: two extinguishers

Sites other than Service Stations: one extinguisher

Note: care should be taken when recommending portable fire extinguishers in service stations. AS 1940 requires at least two 2A 60B (E) extinguishers be provided at fuel dispensing points. Therefore, additional portable fire extinguishers may not be required unless the LPG dispensing point is remote from all other fuel dispensers.

4. REFERENCES

AS/NZS 1596: The Storage and Handling of LP Gas

AS/NZS 1940: The Storage and Handling of Flammable and Combustible Liquids

Note: *this is a controlled document and may only be modified by authorised personnel after review by FRV Fire Safety Advisory Group.*