

Below Ground Tanks

TANK SITING

When vetting a site for a suitable location to install a below ground tank(s) consideration must be given to the presence of underground services, water table, effects of the excavation and damage by vehicles. Semi-mounded is the preferred installation type as shown in the figure below.



Figure 4.14.1 Semi-mounded Installation

Underground Services

Sites should be vetted by a competent person at the planning stage to ensure that no services, gas, water, electricity, telecommunications, drains, sewers, cesspits etc., pass through the tank excavation area.

Water table

Tanks shall not be sited in areas prone to flooding. Consult the Environment Agency for information regarding the potential risk of flooding.

<http://www.environment-agency.gov.uk/homeandleisure/floods/default.aspx>

Tanks shall not be sited in areas with a high water table.

There is always the likelihood of water flooding the tank turret so the tank shall be semi-mounded to ensure that the bottom of the turret is a minimum of 100mm above the natural ground level. This protects the regulator and tank valves located in the turret from being submerged in water.

Only when the turret can have a drain installed to satisfactorily remove ground and rain water can a tank be buried with the turret lid flush with the surrounding land. Expert guidance may be required (i.e. A geological survey).


Below ground tanks in waterlogged ground will be subject to a floatation force of 1 tonne per m³. Without adequate anchoring the tank will rise, straining or damaging the service pipework and anodes. Therefore, all Calor installations use either concrete ballast blocks supplied with the tank or the tank is secured to a concrete base cast by the customer, which incorporates anchor points.

Effects of Excavation

It is recommended that below ground LPG tanks are sited wherever practicable away from buildings or other structures, to protect against the adverse effects of the excavation work.

If no other suitable location is available within the confines of the premises, then the edge of the excavation shall be located no closer than 2 metres to any foundation unless a geological survey, carried out by a competent person, establishes a closer distance is acceptable.

Consultation with the local authority and neighbours may be required under the Party Wall, etc. Act 1996 where excavation work is undertaken within 3 metres of neighbouring owner's building where the excavation will exceed the depth of their foundations, or where excavation work is undertaken within 6 metres of a neighbouring owner's building where the work will cut a line drawn downwards at 45° from the bottom of the neighbour's foundations. Refer to 4.15 Party Wall Etc. Act.

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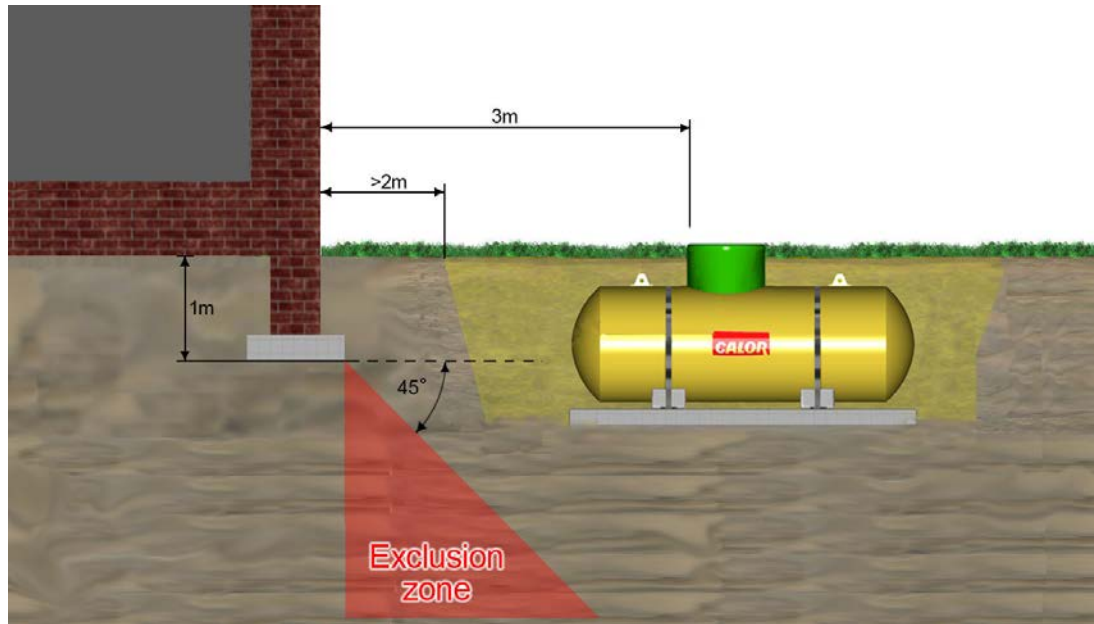


Figure 4.14.2 – Proximity of excavation to customer building


Damage by Vehicles

Tanks shall not be located under public rights of way or driveways.

The tank boundary area (i.e. the previously excavated area) must be suitably protected from the risk of vehicles driving over it. This can be achieved by a barrier suitable for the site for example a low wall or strategically positioned rocks.

ACCESS FOR PLANT AND CRANE VEHICLE

The requirements for crane access are set out in section 4.9.

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SEPARATION DISTANCES

The following table indicates the minimum separation distances permitted for up to 6 tanks of 2000 or 4000 litre capacity. The dimensions in the table refer to the horizontal distance in plan between the tank, its turret and the nearest point for a specified feature, e.g. an adjacent building or boundary.

For installations of more than 6 tanks, see section 4.14.4 on Multiple below ground tanks.

For larger capacity tanks consult National Engineering.

When siting tank(s) it is important to also consider the requirements for safe groundwork (see section 4.18) and party wall regulations (as above and section 4.15), and allow for the turret being offset from the centre on a below ground tank.

Table 4.14.1 Separation distances for tanks up to and including 4000 litres (2 tonnes capacity)

<p><u>Minimum</u> safety distance from buildings, boundary, property line or fixed source of ignition.</p> <p>(For minimum distances to buildings/structures also refer to pages 4.14.2 to 4.15.3)</p>			
To tank surface	To turret		Distance between tanks
	Without a gas dispersion wall	With a gas dispersion wall	
(a)	(b)	(c)	(d)
1m	3m	1.5m	1m

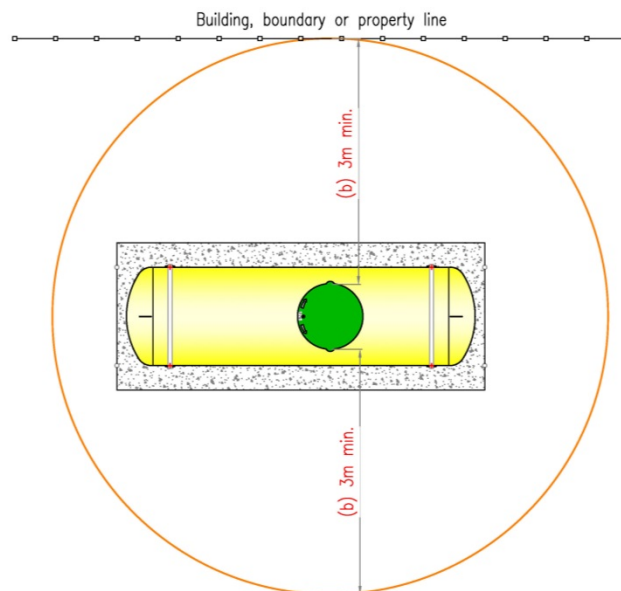


Figure 4.14.3 Below ground tank siting arrangement without gas dispersion wall

Below Ground Tanks

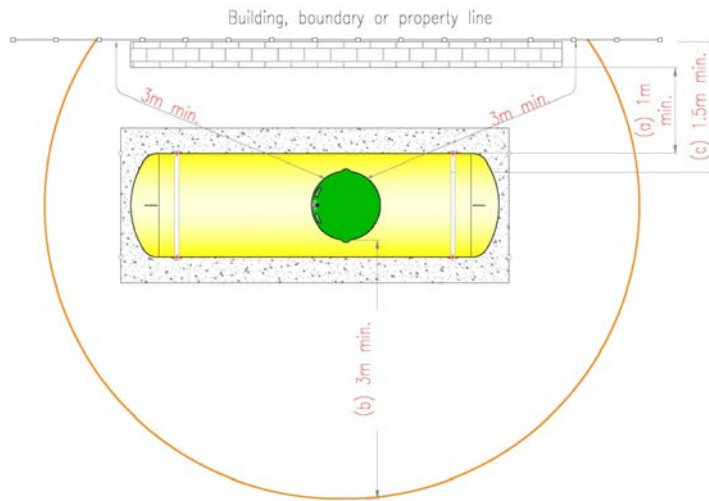


Figure 4.14.4 Below ground tank siting arrangement with gas dispersion wall

For gas dispersion wall lengths see Table 4.16.1

MULTIPLE BELOW GROUND TANKS

Overview

Column 1 of Table 1 in COP1: Part 4 shows the tank capacity in tonnes. Unlike Table 1 in COP 1: Part 1 there is no additional column giving guidance on the tonnage for all below ground tanks in a group.

There are instances when Calor wish to install multiple below ground tanks on a site (i.e. in order to meet the offtake requirements for the customer and it is not cost effective to install a vaporiser system). The separation distances given in Table 1 of COP 1: Part 4 equally apply to single and multiple tanks.

Calor will allow up to 6 tanks in any group provided they are installed and secured to a single cast in situ base. If more than 6 tanks are required for offtake purposes, this may be allowed in one group provided:


- the tanks are installed and secured to a single cast in situ base;
- the maximum number of tanks installed in one group does not exceed 12;
- the total tonnage installed in one group does not exceed 25 tonnes; and

Calor will allow more than one group of tanks on a single site provided that:

- The siting and installation complies with UKLPG COP1: Part 4 and the requirements above;
- Each group of tanks has an independent regulator installation supplying the pipework to independent customer(s) installation;
- The two groups of tanks shall not be interconnected at any point. This includes any network or installation pipework for appliances. It is essential that each group of tanks supplies specific appliances or processes;
- The maximum appliance or process load shall not exceed the nominal offtake capacity of the group of vessels;
- the total tonnage installed on the site does not exceed 25 tonnes

Authorisation for both scenarios above, based on a site specific justification, shall be obtained from a Customer Engineering Project Engineer

End of section 4.14 – Below Ground Tanks – Tank Siting

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