

**Natural Resources Conservation
Authority Guidelines for
Secondary Containment of
Hazardous Liquids stored
Above-ground**

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Definition of Terms

For the purpose of this document, the following key interpretations will be applied.

Bund

A bund is an embankment, enclosure or wall made of an impervious material designed to contain spillages and leaks from liquids used, stored or processed above ground, and to facilitate clean-up operations.

Hazardous liquids

Hazardous liquids refer to a substance that the Authority has determined is capable of posing an unreasonable risk to the natural environment, public health, public safety, and property when transported or stored in commerce.

The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, and dangerous goods as classified by UN Hazard Codes.

Secondary Containment

Secondary containment is a means of surrounding one or more primary storage containers to collect any hazardous material spillage in the event of loss of integrity or container failure. Examples of secondary containment are bunds and spill pallets.

A secondary containment system is one of several preventative measures that may be employed to impede or prevent any hazardous material from presenting an unreasonable risk to environment, health, and safety.

Requirements for Secondary Containment

Facilities that should have secondary containment include but are not limited to facilities that:

- store chemicals, for example pesticides or petroleum
- store electrical transformers containing oil and/or PCBs
- store other hazardous liquids other than water or uncontaminated storm water
- transfer stored hazardous liquids (such as transport facilities)
- have drum storage areas, either temporary or permanent
- have processing areas that handle hazardous liquids

Limits for Secondary Containment of Hazardous Liquids

1. In the case of solitary aboveground storage tanks of a large capacity (4000L), the tanks should be held within an impermeable secondary containment area of 1.1 times (110%) the volume of the tank.
2. Where there is centralized storage of hazardous material in several smaller containers (such as 55 gallon drums) these containers should be held within an impermeable area designed to contain 25% of the total volume of the containers.
3. Tank farms containing large (4000L) storage tanks should be bund to contain 100 % of the capacity of the largest tank in addition to 10% of the capacity of each of the other tanks.
4. In the case of temporary storage, it is acceptable to store drums temporarily on spill containment pallets. However, each pallet should be capable of capturing the contents of at least one of the drums if there is a leak. If these pallets are to be used, the drums must be stored in a level area (to ensure full spill storage capacity), and the area must be covered so that the pallets do not fill with rainwater. These temporary bund arrangements will ensure that there is only localized contamination in the event of a spill.
5. There must be no apertures including holes, pipes or drain valves in any of the bund walls
6. All tanks and storage containers must be properly labelled to display their contents and volume and the manufacturing date of the tank.

Designing and constructing bunds

The bund floor and wall must be built of materials impervious to the contents of any tank or container within the bund. It should be of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in ordinary use, and should not have a damp course¹. There should be no storage of any materials in the bund that may cause adverse reactions.

The bund area must be capable of preventing the migration of any spillage or leakage to the surrounding environment.

It is being recommended that these general rules should be followed when designing and constructing bunds; the two diagrams below illustrate many of the points that should be incorporated into bund design. The use of a roof will prevent rainwater entering the bund and will therefore facilitate an easier removal of spilled material. However, this is optional.

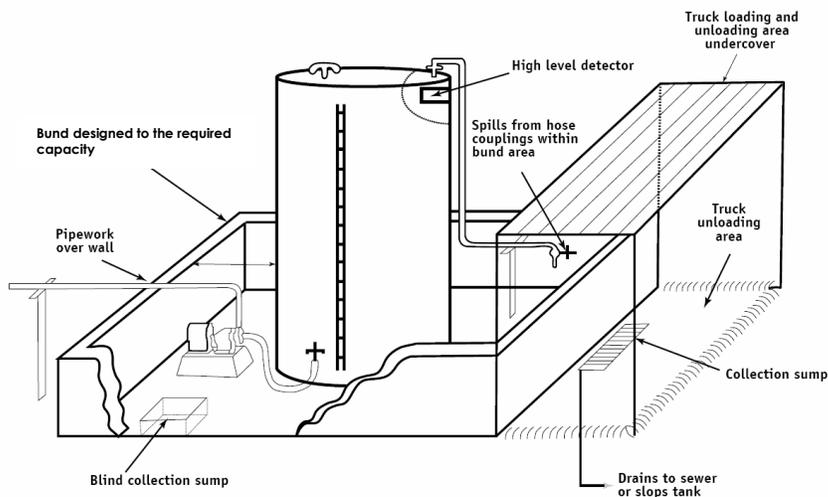


Figure 1 Example of bunding for bulk liquid storage tanks

(Adapted from Victorian and NSW EPA)

¹ A horizontal layer of impervious material in a brick wall, fairly close to the ground, to stop moisture rising (<http://dictionary.reverso.net/english-definition/dampcourse>)

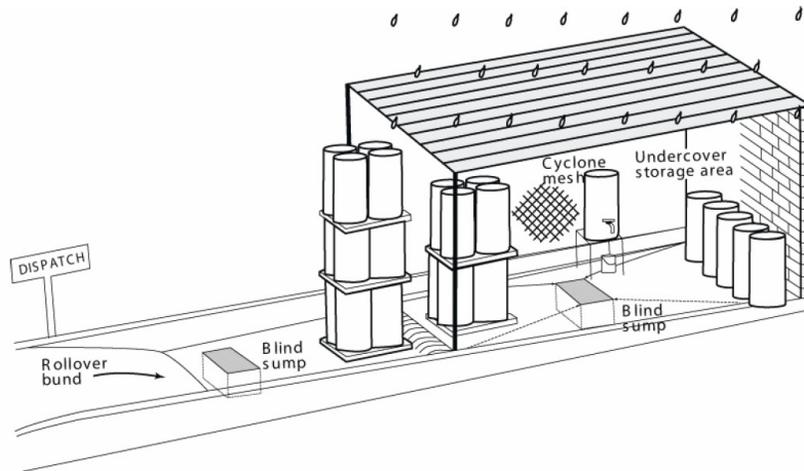


Figure 2 Example of bunding for drums and containers

(Adapted from Victorian and NSW EPA)

Discharge from Bund Areas

Where storm water is contained in a bund area it should be treated to meet the NRCA Trade Effluent standards before being discharged to the environment. There must be no installation of bund drain valves. It is recommended that a collection sump is provided in the bund floor to make it easy to remove liquids, and the floor graded in such a way that liquids collect in the sump.

There should be no direct connection from the bunded area to the natural environment, storm water drainage or sewer systems.

References

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4. MTA Green Stamp Plus Environmental Information Guide – a joint initiative of the Motor Trader’s Association of NSW and the Australian Government Department of the Environment and Water Resources.
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