

Guidance for Sampling and Discharging Liquids from Bunds

Aim

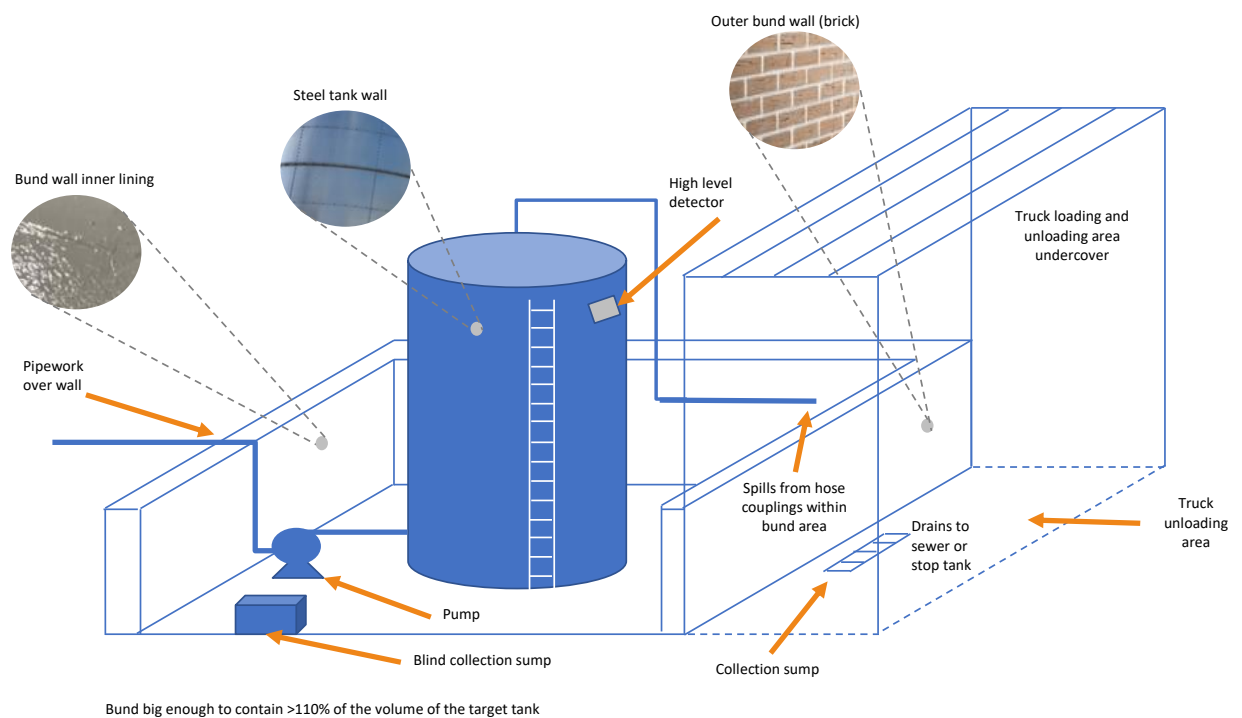
This document seeks to provide guidance on how to detect and safely discharge liquids from bunds and to ensure that regulatory standards are met in line with HSE requirements.

This document has been prepared by Strandek, specialists in waterproofing and resin-based coating and lining systems.

Introduction

Storage tanks containing liquids whose uncontrolled release could be harmful to surrounding persons or the environment should be banded. Bunds should be subject to regular inspection, where appropriate, and any contents disposed of under controlled conditions after checking for contamination.

Bunds in this instance are considered those providing containment around storage vessels and within covered metal containers, as illustrated in the diagram below.



It is recommended that a bund register should also be used to ensure that all bunds are assessed, and scheduled maintenance and inspections performed.

A bund is referred to here as a structure which offers secondary containment for a storage tank or vessel that holds liquids in bulk and/or liquids that may prove

harmful to humans or the environment. Water is referred to throughout these guidelines and unless specified should be considered rainwater or process water.

References & Regulations

Pollution control and the storage of hazardous chemicals

- [Water Resources Act 1991](#) – please note that chapters 85 and 104 are particularly relevant
- [Oil storage at home or at a business](#)
- [Guidance for storing pesticides](#)

Bundling regulations

- [COMAH Competent Authority Work stream – Secondary and Tertiary Containment of Bulk Hazardous Liquids at COMAH Establishments](#)
- [Primary containment regulations for storage of flammable liquids](#)
- [HSE secondary containment regulations](#)
- [Fuel storage site storage](#)
- [Bund design standards](#)

Bund lining, surveying and inspection services

- [Linings and coatings](#)
- [Bund linings and surveys specialists](#)
- [GRP lining specialists](#)
- [Guidance for surveying and inspecting a bund](#)

Presentations on Bund linings and coatings

- [Bund lining systems](#)
- [Fibreglass \(GRP\) bund linings](#)
- [Creating a GRP lining](#)
- [Fibreglass linings and coatings](#)

Case studies on bund failures

- [When bunding costs too much: A COMAH inspired case study](#)
- [Loss Prevention Bulletin](#)

Bund inspections

Who is responsible for overseeing the inspection of a bund?

The site manager is deemed responsible for the bunds including portable bunds that are designed to provide secondary containment on site.

Scheduling bund inspections

Scheduled bund inspections must be performed regularly unless otherwise stated. Deviations and notable observations are those which affect liquid quality inside the bund, as well as that which shows the presence of contamination via colour changes, oil presence or bund wall staining. If material is present, such as that debris (concrete particulates, leaves, soil) that has accumulated in the bund then it should be disposed of accordingly.

How often should bunds be inspected?

Bunds should be inspected once per week by personnel designated by site managers. Portable bunds are considered temporary and subject to separate requirements.

Causes of an increase in bund volume

The following list contains 5 of the most common reasons for an increase in liquid level within a bund. Please note that these are non-exhaustive.

- Rainwater – particularly during wetter seasons prone to flooding
- One or more of the storage tanks/vessels have overflowed
- Piping or drainage valves are leaking
- Process water leakage from supply units
- Storage drums or barrels have leaked

Restricting the source of liquid entering the bund

Should a clear and identifiable source of liquid into the bund be evident and if it is deemed safe, attempt to restrict or terminate flow into the bund. This could involve closing a valve or stopping a pump – instances where the equipment is not necessarily damaged but rather operating incorrectly.

Sampling liquid from the bund

If possible, take two samples of liquid from the bund into chemically compatible jars. The liquid should be collected and dispensed using a chemically compatible pipette. All collection vessels should be appropriately labelled.

Visually inspecting collected liquid

A visual inspection of the liquid extracted from the bund could be performed at this point to provide quick feedback. Key indicators of contamination would be a notable colour change, cloudiness and the presence of oil at the top of the jar. The inspector should also be aware of characteristics specific to the chemicals contained within the primary storage tank. These observations should be

recorded in the aforementioned log and if possible, photographic evidence should be taken to accompany the sample analysis.

Interpretation of analytical result and liquid discharge

If analytical results are acceptable (see the table below), the bund can be drained using prescribed means of liquid discharge. However, there are scenarios where careful further consideration prior to release is required.

- Should an analysis be performed that provides a result outside of the specification outlined in the log, a risk assessment must be created to transfer liquid contents to a designated unit for controlled disposal via an alternative route. It is the responsibility of the site manager to provide oversight.
- In the event that liquid inside the bund has increased but there is no clear source of, a test should be performed to ensure that liquid discharged from the bund does not become inadvertently contaminated. This should involve a test that compares it to liquids stored in other tanks in the bund.
- If an inspection around the outside of the bund reveals liquid discharge an inspection of liquids inside the bund should be performed, along with that which has leaked through. This could be evidence of a loss of integrity in the bund wall – in particular the bund lining, if there is one present. In such instances, a GRP lining or other bund coating system is recommended to repair the bund

Note: Templates for recording the aforementioned observations are provided in the latter part of this document.

Recording bund inspections

- The inspection of bund liquids and the release of non-contaminated water should be recorded accordingly (see the latter pages in this document for template examples). Any abnormalities should also be recorded in the aforementioned template. Both documents should be given to the designated Health and Safety department at annual or bi-annual timepoints. Site managers are responsible for storing a minimum of 12 months of inspection sheets and Health and Safety department up to 7 years.
- Should a visual change in the bund structure (wall, floor, bund lining) or the equipment (piping, drainage systems) held inside it occur, the relevant engineering team should be notified accordingly.
- In the event of an uncontrolled release of liquid from the bund should result in a deviation report and investigation involving the Health and Safety team.

Template log sheets for bund inspections and liquid discharging

Bund inspection log sheet

| | pH | Oil | Solvent odour |
|--------------------------|-----------|------------|----------------------|
| Alkali | 5 – 10 | Absent | N/R |
| Acids | 5 – 10 | Absent | N/R |
| Processed liquids | 05-Oct | Absent | Absent |

Note: Absent = no odour should be present prior to release; N/R = not relevant; pH: limits inside of range 5 – 10 can be released based upon a full risk assessment.

Please note that release should be subject to a full risk assessment and COSHH for all chemicals.

Bund discharge log sheet

| Date | Bund asset number | Visual assessment performed? (Y/N) | Comments | Test | Result | Bund disposal | Signature |
|-------------|--------------------------|---|-----------------|-------------|---------------|----------------------|------------------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Please note that this work should follow an SOP and be in line with a full risk assessment and COSHH form.

Disclaimer: this document is to be used as guidance and as a template for bund inspections. Users accept full responsibility and realise that Strandek does not accept any liability for events incurred during inspections.