Managing carcass disposal

Overview

The unique situation of livestock mortalities in the 2019 northern Queensland floods presents particular challenges for carcass disposal related to:

- dispersed distribution of carcasses across flooded land
- extended time since death resulting in significant carcass decay
- difficulties in carcass handling due to advanced state of decay
- waterlogging of black soils delaying movement of vehicles and machinery
- availability of excavation and transport machinery in the affected locations
- odour and disease concerns due to proximity to urban and residential areas
- potential water resource contamination, e.g., due to proximity of carcasses to dams and drainage lines.

Carcass disposal in the current situation needs to take into account the need for longterm, low-maintenance disposal options, considering the physical and practical constraints of the locations, sensitivities (proximity to urban, residential locations, waterbodies) and available resources.

Importance of effective carcass disposal

Improper carcass disposal can have impacts on the environment as well as human and animal health. Poor carcass disposal can result in contamination of soil, groundwater and waterways. Access to poorly disposed carcasses can also allow for disease spread to other stock through scavengers, mosquitoes and vermin.

Responsible disposal is important to ensure the safety of the community, other stock, the environment and to minimise the risk of disease spread.

Disposal options

There are many disposal methods including burial, burning and composting. However given the current circumstances, burial is the most practical option.

Safe handling of carcasses

Carcasses should be handled as little as possible. Where possible use a machine (excavator or backhoe) to handle the carcass. Appropriate personal protective equipment (PPE) should be worn when handling a carcass, especially if large amounts of dust, fumes or body fluids are produced.

Any cuts or broken skin should be cleaned and covered with a waterproof dressing prior to commencing disposal activities. Hand washing with soap and clean water should always be performed after contact with animals and after removing PPE.

PPE should include:

- gloves
- leather or rubber boots
- clothes that cover exposed skin and
- eye protection.

Take reasonable efforts to protect yourself from the inhalation of dust or other aerosols where Q fever infection may be a risk. Wearing a mask should be considered and assessed on a case by case basis, e.g. when performing any procedures that create aerosols such as using a high-pressure cleaner to decontaminate equipment or if the environment is dry and windy, and will depend whether or not you are immune to or vaccinated for Q fever. Further information on Q fever can be found in the Queensland Health fact sheet (http://conditions.health.qld.gov.au/HealthCondition/condition/14/33/116/q-fever).

Particular attention should be paid to avoid contact with any body fluids from the dead animal. If you feel unwell after handling a carcass contact your general practitioner or call the 13HEALTH information line (13 43 25 84).

Carcass disposal considerations

Where appropriate the most suitable strategy for carcass disposal is to construct small, separate burial pits to accommodate up to 10–15 carcasses each.

Where significant decay has already occurred, e.g. majority of body fluids (leachate) has drained and dispersed, discretion can be exercised in the quantity of carcass remains that are disposed of in each pit.

For small numbers of carcasses requiring onsite disposal, no special planning needs are necessary where the local site conditions are suitable as outlined in this guide.

Where larger disposal pits are required (for higher numbers of carcasses), the site should be subject to specific assessment in terms of the key considerations and likely longterm risks. The Department of Environment and Science (DES) can provide assistance with determination of individual site suitability. Contact the DES Pollution Hotline on 1300 130 372.

Disposal pit site selection and construction

Taking into account the particular situation, the following guidelines for disposal pit site selection and construction are recommended:

- A maximum of 10–15 carcases per disposal pit to minimise:
    - local generation of body fluids
    - potential for fluid movement and odour releases.

- Where multiple pits are necessary, spacing between pits should be a minimum of 25 metres for reasons of safety and to provide adequate soil to enable sufficient breakdown of body fluids.
- The use of absorbent material in the bottom of the pit (where practical), e.g. hay and/or woodchips, to slow down release of body fluids and encourage biodegradation.
  Note: approximately 160 litres of body fluids can be expected from a fresh adult bovine carcass.
- Construct pit and final cover as per the following burial pit construction guidelines.

Site assessment criteria

Criteria	Spatial analysis	Notes
1. Proximity to drinking water supply	The site will not be within 300 metres of a borehole used for drinking water.	Not applicable: • for single carcasses • pits containing 10–15 carcasses.
2. Soil characteristics	The site will be located on soil of low permeability and good stability.	All flooded locations are by their nature low-lying and silty-clayey soils which implies reasonable soils for containment in construction pits. However, characteristics of unusual sites should be assessed on a case-by-case basis.
3. Groundwater depth	Groundwater depth at the site will be at least 5 metres from the bottom of pit. i.e. minimum 5 m deep pit + 5 m buffer = 10 m surface to groundwater level.	Water tables in the affected area range from 15–300 m deep
4. Proximity to surface water	The site will be more than 100 metres from any watercourse.	

Criteria	Spatial analysis	Notes
5. Site accessibility	The site will be 250 metres from underground and above ground infrastructure (such as a powerline, telephone line, gas line, water pipes, sewerage).	
6. Site terrain	The site will be on elevated land but with a slope of less than 6% (3.5°) (preferably less than 2% (1.15°)).	
7. Proximity to human habitation	The site will be more than 200 metres from: • a town • any dwelling.	
8. Proximity to protected areas	The site will not be within 250 metres of: • a World Heritage Area. • a national park or conservation area or indigenous cultural sites (including midden sites).	

Burial pit construction guidelines

The preferred equipment for constructing of burial pits is an excavator. Pit construction should only be undertaken by persons trained and licensed to operate the required machinery. At no time during or after the construction of the pit should people enter the pit.

The preferred method of digging a pit is to construct a deep, narrow, vertically sided pit (trench burial). The pit must be deep enough to allow the carcasses to be covered with at least two metres of soil. The cover soil can be slightly mounded after backfilling.

Suggested dimensions for constructing on-site burial pits are four to five metres in depth which results in three metres of carcass depth and the two required metres of soil cover (Figure 1). The pit should be no greater than three metres wide which helps create an even spread of carcasses in

the pit. The length of the burial pit will be determined by the number of carcasses requiring disposal.

For more information on the construction of burial pits and how to work out the size pit required for your situation, please refer to the AUSVETPLAN Operational Manual (http://www.animalhealthaustralia.com.au/wp-content/uploads/2015/09/DISP-08-FINAL24Aug15.pdf) for disposal procedures.

If land in the area that the pit is to be constructed is too unstable or there are work and safety concerns, a pit with battered (sloped) sides may be constructed (Figure 2).

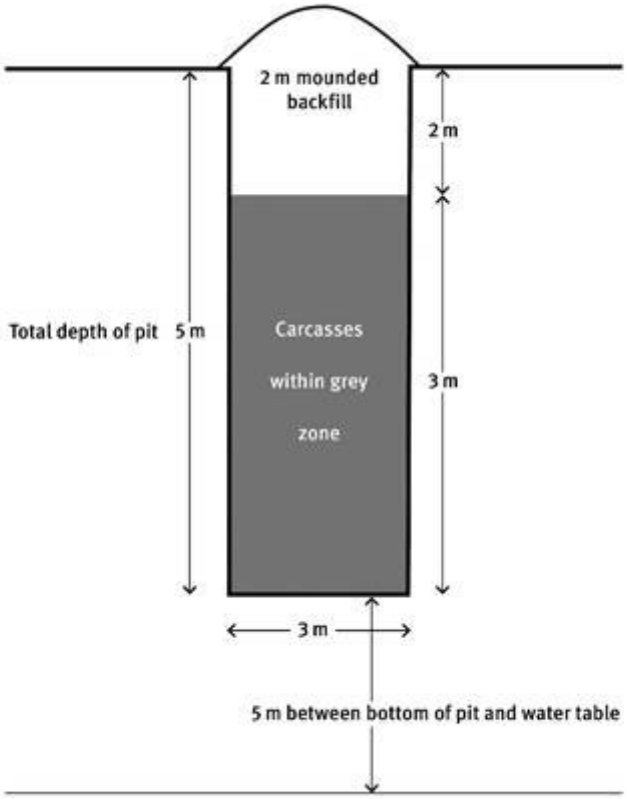

Figure 1 – Traditional trench style burial pit

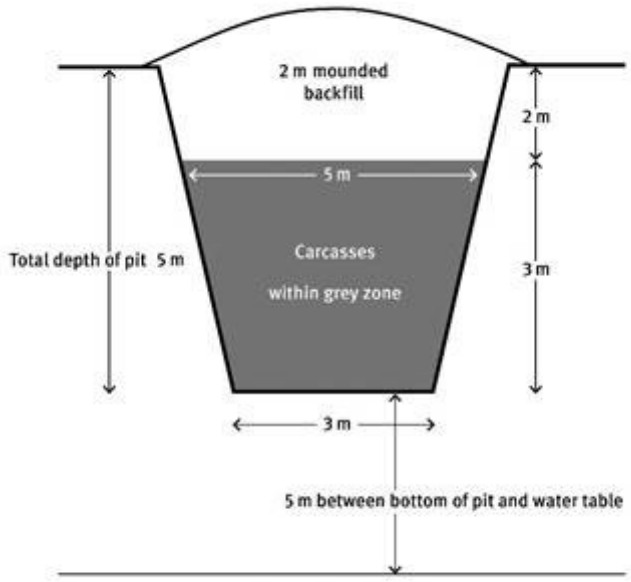

Figure 2 – Traditional battered burial pit

Particular characteristics of affected locations

Cloncurry

Around the township of Cloncurry existing borehole soil stratigraphy and water table data suggest that the aquifers in use are similar in nature, as follows:

- Depth to aquifer generally deep ranging from about 15–40 metres
- Aquifer confined or semi confined with static water levels rising under hydrostatic pressure to about 10–15 metres below ground
- The aquifer being in porous strata including granite, dolerite and limestone overlain by various impervious units of rock, clays and silty soils.

Overall surface soils and strata appear suitable for small disposal pits with no risk to groundwater.

Julia Creek

Around the township of Julia Creek there are few bores, probably due to the depth of the water table, which is about 300 metres. Existing borehole soil stratigraphy and water table data suggest the aquifers in use are the same strata, or similar in nature, as follows:

- Thick layers of variable clayey surface soils to about 25 metres.
- Depth to useful aquifer generally deep at about 300 metres. Upper minor aquifer at about 10 metres in yellow clay noted as salty and probably unconfined and unusable for supply in flow and quality. Mid-level poor production aquifer at about 120 metres in sandstone unit.
- Aquifer confined or semi–confined with static water levels probably rising under hydrostatic pressure but no static water levels recorded. Temperature of water of 52°C and moderate salt content indicates a confined, artesian source for main water supply.
- The aquifer being in porous strata including sandstone overlain by various impervious units of rock, shale and clays.

Overall surface soils and strata appear suitable for small disposal pits with no risk to groundwater.

Hughenden

Around the township of Hughenden there are bores that tap both a deeper artesian aquifer and shallower bores in an unconfined aquifer in sandy alluvium. Existing borehole soil stratigraphy and water table data suggests the aquifers in use are similar in nature, as follows:

- Variable surface layers of clay and shales to about 18–20 metres. More sandy lenses closer to the river.
- Unconfined aquifer at 7–12 metres in sandy strata in some places closer to the river in alluvium mostly north of the river. Aquifer may be in use.
- Deeper aquifer in use at 175–183 metres. Static water level at 84 metres below ground indicating artesian pressure from a confined aquifer.

Caution needs to be exercised for disposal close to larger water courses due to the presence of sandy porous layers from buried alluvium in paleo-channels. Overall surface soils and strata appear suitable for small disposal pits with no risk to groundwater away from the river.

Richmond

Around the township of Richmond, there are few bores probably due to the depth to the water table of about 220–300 metres in layered sandstone and mudstone strata. Existing borehole soil stratigraphy and water table data suggest that the aquifers in use are similar in nature, as follows:

- Thick layers of variable clayey surface soils to 13–30 metres.
- Depth to useful aquifer generally deep at about 300 metres in sandstone. Static water levels of 30–50 metres and water temperature of 40°C suggest an artesian source.
- Aquifer confined with static water levels probably rising under hydrostatic pressure.
- The aquifer being in porous strata including sandstone overlain by various impervious units of rock, shale and clays.

Overall surface soils and strata appear suitable for small disposal pits with no risk to groundwater.

Last updated: 12 Feb 2019