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# North and West Queensland weather event, February 2019—carcass disposal

*Information as at 15 February 2019*

## **Overview**

The unique situation of livestock mortalities in the 2019 northern and western 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 long-term, low-maintenance disposal options considering the physical and practical constraints of the locations, sensitivities (proximity to urban and residential locations and water bodies) 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
- 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 P2 mask (particulate respirator) 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 long-term 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.

### ***Use of lime on decomposing carcasses.***

The addition of lime to burial pits is not recommended. Lime has been shown to slow down the naturally occurring decomposition process.

For above ground exposed carcasses and carcass fluids, where there is an immediate need to discourage insects and flies spreading infection and to mitigate odours, lime can be applied as a surface covering. It can be used to absorb liquid and reduce the speed of decomposition.

As a surface covering, limited amounts of lime are not considered to be environmentally significant. Caution needs to be taken when applying lime. Follow the manufacturer's guidelines around the use of PPE, particularly to prevent the inhalation of lime dust.

### ***Disposal pit site selection and construction***

The general guidelines on the disposal of carcasses need to be applied within the context of local conditions, particularly in regards to the soils types being suitable to contain liquid leachate and having an adequate separation between the disposal pit base and underlying groundwater that may be used as a resource.

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

- A maximum of 10–15 carcasses 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.

### ***Particular location characteristics***

All flooded locations are by their nature low-lying and silty-clayey soils, which implies reasonable soils for containment of leachate in construction pits. This can be assessed locally by digging test pits and local information on the depth to groundwater may be available from landholders from knowledge about resource uses such as bores and windmills. However, characteristics of unusual sites should be assessed on a case-by-case basis.

For detailed information on some specific affected locations, please refer to Appendix 1 or visit [www.daf.qld.gov.au/business-priorities/agriculture/disaster-recovery/natural-disaster](http://www.daf.qld.gov.au/business-priorities/agriculture/disaster-recovery/natural-disaster)

### ***Site assessment criteria***

<b>Criteria</b>	<b>Environmental factors to be assessed</b>	<b>Notes</b>
<b>1. Proximity to drinking water supply</b>	The site will not be within 300 metres of a borehole used for drinking water.	Burial sites consisting of multiple pits of 10–15 carcasses each, in close proximity to each other are to be at least 300 metres from bores.  Not applicable to: single carcass burial sites single pit burial site containing 10–15 carcasses.
<b>2. Soil characteristics</b>	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.

Criteria	Environmental factors to be assessed	Notes
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 metres deep.
4. Proximity to surface water	The site will be more than 100 metres from any watercourse.	
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: <ul style="list-style-type: none"> <li>• a town</li> <li>• any dwelling.</li> </ul>	
8. Proximity to protected areas	The site will not be within 250 metres of: <ul style="list-style-type: none"> <li>• a World Heritage Area.</li> <li>• a national park or conservation area or indigenous cultural sites (including midden sites).</li> </ul>	

### ***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.

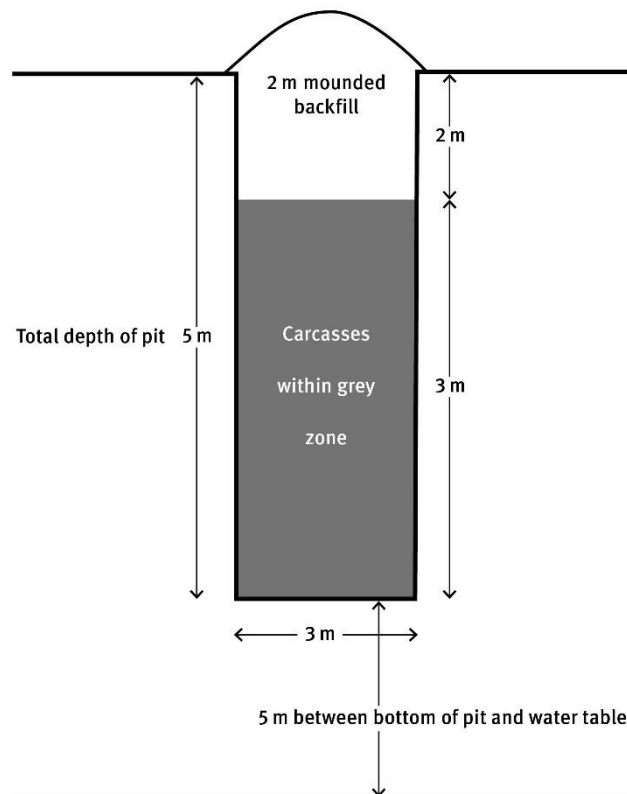
For more information on the construction of burial pits and how to work out the size pit required for your situation, please refer to the AUSVETPLAN Operational Manual for disposal procedures: [www.animalhealthaustralia.com.au/wp-content/uploads/2015/09/DISP-08-FINAL24Aug15.pdf](http://www.animalhealthaustralia.com.au/wp-content/uploads/2015/09/DISP-08-FINAL24Au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

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).

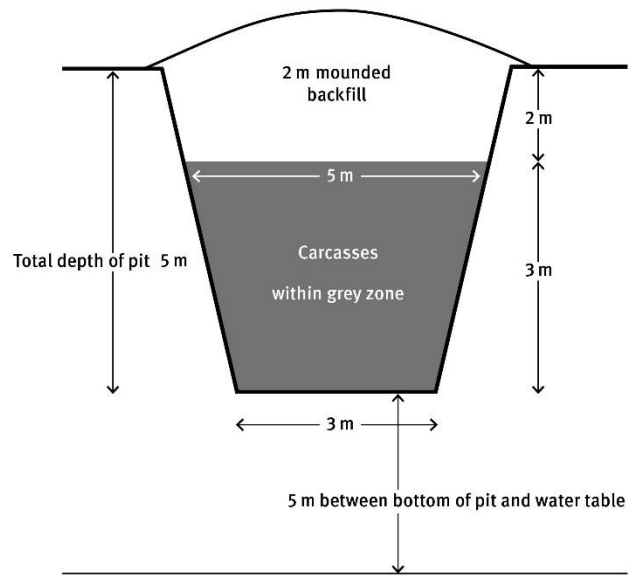
### ***Safe use of plant and equipment***

Prior to commencing carcass disposal, it is important to ensure you use the most appropriate machinery for the job and ensure operators know how to use and maintain machinery correctly. Contact with overhead powerlines and underground cabling pose extreme risk in these situations. Ensure operators work outside the three metre mandatory exclusion zone for energised lines. Ground conditions will impact the stability of machinery, assess this and modify work accordingly. For more workplace health and safety information see:

<https://www.worksafe.qld.gov.au/agriculture>



**Figure 1 – Traditional trench style burial pit**



**Figure 2 – Traditional battered burial pit**

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The information provided in this fact sheet has been developed with specific consideration to the situation arising from the 2019 floods in North and West Queensland. Special thanks to the Department of Environment and Science for technical expertise and New South Wales Department of Primary Industries for their fact sheet *Animal carcass disposal*.