

**WAT-G-055**

**EASR Guidance: Permit Activity: Carcase burial**

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# Purpose

This document provides information and guidance for anyone undertaking the burial of animal carcases during the outbreak of notifiable disease which requires a permit under The Environmental Authorisations (Scotland) Regulations (EASR).

It also provides guidance on when a permit application not required.

# Understanding the activity

In the event of a notifiable disease outbreak, on-farm burial or burning is permitted under The Animal By-Products (Enforcement) (Scotland) Regulations 2013 (ABPR). Depending on the disease, all animals caught up in the disease outbreak (even ones that are not themselves diseased) may be eligible to be culled and buried/burnt on farm. This burial requires a permit under The Environmental Authorisations (Scotland) Regulations (EASR).

Information on the diseases classed as “notifiable” may be found in [Notifiable Diseases in Animals webpage.](https://www.gov.uk/government/collections/notifiable-diseases-in-animals) The more common notifiable diseases include foot and mouth, avian influenza, swine fever and scrapie. In most cases an outbreak will result in mass culling of affected animals.

The Animal and Plant Health Agency (APHA) is responsible for the disposal of carcases from infected premises. They will choose the disposal method and take responsibility for this. However, they will liaise with the Local Authority, Police and SEPA staff in coming to that decision.

If carcase burial is planned an APHA representative (or another suitable person) must apply to SEPA for an EASR permit. This can be fast tracked.

If, as a result of movement restrictions arising from an outbreak, animals have to be culled on welfare grounds due to insufficient feed, bedding or housing, farmers will need to organise carcase disposal themselves with advice from AHPA and SEPA and, if burial is being proposed, an application for an EASR permit will need to be made by the farmer/landowner.

Any permit application will require you to:

* Show that the site meets the minimum requirements in Box 1. Information on the soil must be supported by the excavation of at least three 5 metre deep trial pits.
* That you have put in places the leachate management, capping, basal drainage and gas management measures detailed in Annex 1.

The Scottish Government have an [Exotic animal disease contingency framework plan](https://www.gov.scot/publications/exotic-animal-disease-contingency-framework-plan-august-2022/pages/1/) which sets out roles and responsibilities how bodies will work together.

APHA will also use approved disinfectants at the affected premises in controlling the spread of disease. Depending on the volumes involved, the disposal of this detergent and disinfectant will require an EASR registration. Information is available on this activity is found on the disposal of chemicals during the outbreak of a notifiable disease webpage.

# Risks to the water environment

Carcases release breakdown products following burial which can infiltrate through the soil and subsoil into groundwater. This can cause groundwater pollution, may give rise to impacts on dependent rivers or wetlands and pose a threat to drinking water supplies.

Information on the decomposition of animal carcases suggests that there is rapid fluid generation (within 48 hours) equating to 170 litres per cow and 16 litres per sheep (50% within 1 week and remainder within 2 months). As there is no absorptive capacity within the waste, the generated leachate may rapidly migrate into groundwater in the days following disposal. After the initial couple of months, the leachate production will be more closely related to the infiltration rate through the cap. The carcases may have fully decomposed after about 10 years.

Initial leachate from burials will be rich in ammonium, (typically 2,000 - 4,000 mg/l expressed as N) and potassium, (400 - 1,500 mg/l as K+) with a very high COD (30,000 - 200,000 mg/l). Initial pH is neutral to slightly acidic.

There is little evidence from the 2001 foot and mouth disease outbreak that sheep dip chemicals are present in leachate generated at mass disposal sites that have received sheep carcases. This may in part be due to the outbreak occurring sometime after the autumn dipping.

In addition to polluting substances there is a risk of transmission of pathogens via groundwater to sensitive receptors.

# Our regulatory approach to the burial of animal carcases during a notifiable disease

The burial of animal carcases during the outbreak of notifiable disease should only be considered where rendering, incineration or landfilling options are not possible.

Due to the hydrogeological conditions in Scotland, it is unlikely that many suitable burial sites will be found. An EASR authorisation is therefore unlikely to be granted in many cases and burning the animal carcases may be a better environmental option.

However, where other disposal options are not feasible and a location which will fully protect the water environment can’t be found then the burial may take place under the terms of an exemption from the EASR requirement to take all measures necessary to prevent and limit the input of pollutants to groundwater.

In these cases, the best possible burial location should be found, appropriate engineering, leachate management and monitoring of the site should be put in place.

Where a carcase burial site is likely to cause pollution of the water environment an EASR permit will only be issued where:

* Any unacceptable risks to the water environment can be mitigated by sustainable artificial means (e.g. liner); or
* A pyre cannot be constructed and operated following SEPA Guidance and it is assessed that the risks to human health or the environment posed by burial is less than that from burning.

If incineration on farm is carried out following a notifiable disease, then the ash should be collected and stored pending disposal at an appropriate landfill.

# Background to regulatory approach

Information gained from the 2001 foot and mouth disease outbreak indicates that pyres did not have an adverse impact on human health or the environment. For example, pollutants were either lower than air quality standards or within the range of urban background standards. The impacts from burial were also low. This was thought to be due to careful burial site selection by the Agencies. However, there were some incidents of water pollution recorded as a result of burial. Some water supplies were disrupted and complaints of odour were received.

This information suggests that provided best practice is followed in the siting and operation of pyres that in general pyres pose a lower risk to human health and the quality of the environment as a whole than burial. Pyres have a short-term effect while the impacts from burial may take many months to become apparent and are likely to persist for many years.

# When is an EASR authorisation not required

## 6.1 Pet burial

You don’t need an EASR authorisation for the burial of a dead domestic pet in the garden of a domestic property where the pet lived. Larger scale burial of pets in pet cemeteries is regulated by APHA. Further guidance is available on the [Animal and Plant Health Agency website](https://www.gov.uk/guidance/pet-cemeteries-where-you-can-build-them-and-how-to-register).

## 6.2 Burial of fallen stock

You don’t need a SEPA authorisation for the burial of fallen stock provided the PEPFAA code is followed. The routine burial of fallen stock is not generally permitted by the [Animal By-Products (Enforcement) (Scotland) Regulations 2013](https://www.gov.scot/policies/animal-health-welfare/animal-by-products/). This is because these regulations only permit the on-farm disposal of fallen stock within the designated remote area and only then where no other approved disposal route (i.e. rendering or incineration) is available. The Scottish Islands, including mainland Orkney, and most of the Highlands including Caithness, Sutherland, Easter Ross and the Black Isle have been classified as “the designated remote area” and this area is shown in the PEPFAA Code of Good Practice and as a map in [Animal by-products: disposal guidance](https://www.gov.scot/publications/animal-by-products-disposal-guidance/).

Fallen stock may also be buried where access would only be possible under circumstances (related to geographical or climate reasons or due to a natural disaster) which would pose a health and safety risk to the personnel carrying out the collection or where access would necessitate the use of disproportionate means of collection.

Local Authorities (LAs), SGRPID and Animal and Plant Health Agency (APHA) hold the enforcement responsibilities for various aspects of the ABPR. Where SEPA have reason to believe that good practice is not being followed or fall outside of the ABPR, then we should inform APHA.

## 6.3 The burial of wild animals or parts of wild animals

You don’t need a SEPA authorisation for the burial of the burial of wild animals or parts of wild animals, e.g. gralloch (the entrails of a dead deer) provided the PEPFAA code is followed.

# Box 1 Guidelines for possible suitable burial sites

A burial site must not be located as a minimum:

* Within 250 metres of any well, borehole or spring used for abstraction.
* Within 250 metres of any drinking water supply.
* Within 50 meters of any watercourse, wetland etc.
* Within 10 meters of a field drain.
* In areas where the water table is close to the surface, such as, low lying or boggy ground.
* In areas where the soils are highly permeable, for example, sands and gravels.
* In areas where the soils are of low permeability, for example, clay.
* In areas where the land is prone to flooding.

There must be at least two metres of unsaturated soils below the base of the pit (confirmed by trial pitting where necessary) and one metre of soil covering the carcases. So, depending on what needs to be buried, any proposed location would need to have nearly 3.5m of unsaturated soils before it is suitable. In some locations, this will rule out burial or severely limit the number of carcases that can be buried. If the trial pits are constructed in summer or drought conditions a safety factor is required when determining the thickness of the unsaturated soils and a therefore a thickness of 5m of unsaturated soil below the ground surface may be required at these times.

# Annex 1: Site engineering

* Leachate management and its disposal are important considerations as a large amount of fluids are released from carcases, particularly in the first few months following burial. This will be especially important for sites in low permeability ground. Note that capping is likely to result in squeezing of fluids from carcases and an initial increase in leachate levels.
* Subsurface field drains within 10m of the boundaries and hydraulically down gradient of the burial pit should be removed.
* Capping should allow for subsidence of the buried carcases and may need to be restored where surface depressions have formed. It should also have a lower permeability than the base of the site to prevent leachate build up and should be sufficiently robust to avoid impact from vermin.
* The base of the burial pit should ensure even drainage e.g. include a layer of crushed stone.
* Gas management should be considered.
* For large burials (greater than 50 tonnes) engineered containment will be required. These will need to be considered on a site-specific basis and designed by an experienced geotechnical engineer. Guidance is as follows:
	+ **Supervision and QC**. An experienced geotechnical engineer should be involved in the design and construction of the works. There is unlikely to be time for QC testing and this can be done at a later date if possible. If possible, a brief method statement should be produced before burial starts.
	+ **Leachate disposal/treatment/storage.** This should be established prior to burial with contingencies in place.
	+ **Site preparation.** This is site specific e.g. removing sand lenses and drains. Installing drainage to minimise infiltration of surface run-off.
	+ **Liner:**
		- **Natural/enhanced in-situ containment**. If you are proposing to use a natural/enhance in-situ containment you should conduct a site investigation to determine the conditions of the sub-surface. Enhancement may be required, for example, digging out sand lens, or compaction of base.
		- **Engineered clay liner.** The thickness should be 0.5-1m on base and sides. Clay should be from well characterised source, be compacted wet, be in a plastic state and strong enough to be trafficked over (e.g.>40KPa). Samples should be taken to confirm permeability (can be reported later).
		- **Geosynthetic Clay Liner (GCL).** These are good where time is limited and they are easy to install. They must be installed in line with manufacturers specifications. There should be adequate protection so as to avoid puncture e.g. geotextile protection. This is especially where a crushed stone or angular aggregate is to be used as the drainage layer. The liner must be hydrated with clean water after installation of the drainage layer and before carcases are deposited.
		- **Flexible membrane liners (FMLs).** Welds should be tested both constructively and destructively on site. Manufacturers data sheets should be provided. Factor welded thinner, more flexible products could be used if protected from puncture to speed up works.
	+ **Drainage layers.** The basal gradient should be sufficient to promote flow of leachate to collection point for extraction To avoid clogging a full basal drainage blanket should be installed with perforated pipe within the blanket and a sump for pumping and monitoring. Consideration should be given to side slope drainage. The recommended stone drainage layer is a minimum of 300mm, preferably 500mm using competent stone of minimum of 16mm diameter. The drainage layer and pipe collection system should be chemical resistant and have sufficient strength to withstand loading and cope with predicted flow rates.
	+ **Capping.** You should cap as early as possible. Due to settlement, you should consider initialling a temporary cap (e.g. geosynthetics) followed by permanent cap. The cap should be shaped to allow surface water run-off. You should consider gas management systems. The final cap should be in line with that for a normal landfill. Geosynthetics may require protection.
	+ **Monitoring.** For very large sites or where there is doubt or concern about risks to receptors monitoring may be required as a condition of the authorisation. This may include drilling monitoring boreholes, but more commonly monitoring existing receptors such as springs, groundwater fed ditches/watercourses or water supplies.

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