



DISPOSAL

BURIAL (INCL. ENGINEERED LANDFILL) WORK INSTRUCTION & CHECKLIST



Ministry for Primary Industries
Manatū Ahu Matua



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Disclaimer

This publication is for the purpose of supporting the New Zealand poultry industry in responding to disease outbreaks, including Highly Pathogenic Avian Influenza (HPAI), Newcastle Disease (ND), Infectious Bursal Disease (IBD), and Salmonella Enteritidis (SE). While every effort has been made to ensure the accuracy of the information presented, the Poultry Industry Association of New Zealand (PIANZ) and the Egg Producers Federation (EPF), and MPI accept no responsibility or liability for errors, omission, or opinion contained herein, nor for any consequences arising from decisions made based on this information.

1. Purpose

This work instruction and checklist outline the processes for safely burying contaminated material, such as carcasses, eggs, litter, or infrastructure infected or suspected of having a notifiable disease such as Highly Pathogenic Avian Influenza (HPAI), either onsite or at an approved offsite disposal location e.g. landfill.

Why this matters:

Burials must be done safely and securely to prevent the persistence or spread of disease. Under the Biosecurity Act 1993, no one can knowingly spread disease, so this is a legal obligation.

Biosecure burial defined:

The controlled containment and disposal of infectious material in a designated pit or disposal site.

🔗 Please read this document in conjunction with the **Standard, Disposal Guideline** and the **Disease Response Biosecurity Plan Guidebook** to ensure all procedures are followed correctly. Where a site already has a Standard Operating Procedure (SOP) for biosecure burial which meets the requirements in the standard, use the SOP.

In this document, “you” can refer to either an MPI person or a farmer/operator, depending on who is leading the response activities.

2.Actions

Before you Start - know the workload challenge

To plan burial properly, first figure out:

- **What** needs disposing of (e.g. carcasses, eggs, litter, infrastructure);
- **How** much material there is;
- **When** it needs to be moved.

🔗 For farmers/operators, you can use **Section B2** of the Disease Response Biosecurity Plan Guidebook and Template, or the online Disease Response Biosecurity Plan Form to help record this information.

Understanding the challenge helps you:

- Choose the right gear (bins, liners, machinery);
- Line up the right people;
- Build a clear health and safety plan and procedures for burial.

Remember that burial sites usually require **resource consent**:

- 🔗 Refer to your **Regional Disposal Guide** for specific requirements.
- 🕒 Consents can take time, so if a resource consent is required the application and approvals should be completed ahead of a disease incursion for this to be a viable disposal option.
- 🔗 **See Appendix A** for the key information about the burial plan.
- 🔗 **See Appendix B** for burial examples to help plan your detailed approach.
- 🔗 **See Appendix C** for step-by-step instructions on how to carry out burial.

Remember the red line

The *farm production area map* (Section A.2.1 of the Disease Response Biosecurity Plan Template) shows the infected site and there should be a similar map for the disposal site (if off-site). Treat these sites like they have a border - the **red line**.

Inside the red line = contaminated.

Your job = **keep infection from crossing out of the red line.**

- ☒ For on-site burial, prepare the disposal site e.g. pest control, digging the pit and drainage.
- ☒ Ensure the size of the pit and the number of personnel are sufficient to manage the volume of contaminated material safely.
- ☒ Move the contaminated material to the pit and bury it without contaminating the environment.
- ☒ The burial site will need to be inspected weekly for the first month, and monthly thereafter as well as after extreme weather events and earthquakes.

Work with contractors and disposal site managers to make sure everyone is on the same page. Plan depopulation and disposal together to meet timelines and biosecurity requirements.

2.1 Materials & personnel

These are the core elements that support good practice. You may need to scale up depending on the size of the job:

Category	Item
 Personal Protective Equipment (PPE)	• Personal Protective Equipment as outlined in the Health New Zealand guidance. • Antiseptic wipes. • Disinfectant and spray bottle. • First aid kit. • Paper towels.
 Safety equipment	For loading, unloading and transportation, a spillage kit for containing leaking fluids, material for temporarily sealing leaks (e.g., caulking compounds), and an approved disinfectant should be carried, and drivers trained in how to use it. • Drivers who deal with leaks must notify the site manager (e.g. RMP operator or MPI) as soon as possible. They and the cab will be considered contaminated and full decontamination processes will be required.
 Equipment	• Liner system, if using. • Large plastic rubbish bags. • Cable ties. • Large plastic containers. • Data and information sheets, pens, and clipboards. • Flags, signage and tape (e.g. electric tape) to secure the burial area. • Backpack sprayer and disinfectant.
 Machinery & vehicles	Excavation equipment i.e. front loaders, telehandlers, or similar machinery, 20 to 25 tonne capacity diggers are recommended

2.2 Health & safety actions

The on-site **written, health and safety plan** for burial activities at the infected site or off-site burial area, needs to cover risks associated with burial during a disease incursion. If you're working with contractors or using an **off-site burial location**, make sure you're familiar with and coordinate with their Health & Safety Plans too.

This ensures everyone is working safely, understands the risks and follows the right procedures to prevent disease spread.

This plan should cover:

- **Entry and exit points** (watch for contamination), including disinfection steps for vehicles, equipment and personnel before departure and after arrival;
- **Risk management for handling infected carcasses or waste;**
- **Movement controls** for vehicle movement through high-risk zones (e.g. near sheds, water sources, or red line boundaries);
- **PPE requirements** for drivers and loaders;
- **Spill or leak risks** during loading/unloading and transportation.

Work with:

- The **truck company** (if transporting to off-site burial);
- The **final disposal site** (e.g. landfill operator). Have a clear plan in place if the site is not commercial;
- Any **contractors** involved in excavation, loading, or burial.

Make sure everyone understands each other's health and safety plans and that they're aligned.

Follow these rules:

- ☒ Conduct a health and safety briefing based on the site-specific plan.
- ☒ Keep accessways clear and safe for vehicles and machinery.
- ☒ Ensure adequate lighting, especially if working at night or in low visibility.
- ☒ Wear correct PPE at all times.
- ☒ Stick to all biosecurity procedures, including recording and reporting any new risks.
- ☒ Handle materials carefully to prevent spread during loading, transport, and burial.
- ☒ Watch for leaks or spills and follow agreed actions if they occur.

 Refer to: [Avian influenza health and safety guidance for workplaces – Health New Zealand | Te Whatu Ora](#)

2.3 Burial procedures

Where there is one, use the site's SOP for burial and/or be familiar with the SOP for the off-site burial site e.g. landfill. Before starting, check the SOP against the Disposal Guideline and Standard, to ensure it supports good practice and meets requirements. If it doesn't, update it or arrange an alternative method. If no SOP exists, create one using the Disposal Guideline and Standard.

Auditors will use the **Burial Audit Checklist** to confirm all required steps are completed.

✎ **See Appendix D** for a summary to help you check you have covered all the required steps.

For farmers/operators:

✎ **See Appendix C and E** for help with writing your burial SOP.

✎ **See Appendix F** for case studies that show what to expect in real-world scenarios.

Engineered landfill

For landfill disposal, the **landfill operator's SOP** is the primary work instruction.

For MPI:

The landfill operator's SOP may be audited against the Disposal Guideline and Standard by an authorised person. If the SOP doesn't meet the required standard, the operator will need to amend their procedures or if they are unable to comply, they will be unable to accept contaminated material for biosecure burial.

✎ The **Biosecure Transport Work Instruction and Checklist** should also be followed.

Tip: Burial and biosecure transport procedures can be integrated into one SOP.

For on-site burial you need a plan for

Stage	What to Cover
Preparing the site	Choose a suitable location. Control pests, dig the pit, check drainage, and set red line boundaries. Ensure access to machinery and vehicles.
Moving contaminated material	Use sealed bins or containers. Wear PPE. Avoid spills. Disinfect gear and vehicles before and after movement.
Filling the pit and covering the material	Place material carefully to avoid spread. Compact and seal the pit. Lime should only be used if covering eggs to reduce odour, as for other organic material, lime interferes with decomposition.
Securing the burial site	Fence/tape off the area. Post signage. Restrict access. Record disposal details and clean equipment.
Monitoring the burial site	Inspect weekly for the first month, then monthly. Check after heavy rain, flooding, or earthquakes. Look for signs of disturbance or leakage.

3. Appendices

Appendix A: Key information

Availability and suitability of burial sites

Burial is a practical and biosecure method for disposing of contaminated materials, including carcasses, and litter. However, not all sites are suitable:

- Land availability must be assessed early, considering proximity to water sources, residences, and sensitive ecosystems.
- Soil type and drainage capacity affect pit stability and containment.
- Water table depth is critical, with a minimum 2m separation between the pit base and the highest seasonal water table.

Regional variation exists in the rules around burial. Refer to the regional disposal guides and contact your local council early to confirm requirements and obtain the necessary resource consents.

General and council requirements

New Zealand councils may require:

- Minimum separation distances from wells, property boundaries and water bodies;
- Pit depth and cover specifications, typically requiring at least 2 metres of compacted soil above carcasses;
- Stormwater diversion structures to prevent leachate escape;
- Monitoring and reporting of burial site conditions post-disposal;
- Use of liners (e.g. geosynthetic clay liners) in high-risk or sensitive areas.

These requirements aim to prevent environmental contamination and ensure long-term containment.

Health and safety protocols

Burial operations must follow strict health and safety standards to protect workers and prevent pathogen spread:

- Personal protective equipment (PPE) is mandatory.
- Carcasses and contaminated materials should be handled with tools, not bare hands.
- Transport vehicles must be leak-proof and disinfected before and after use.
- Avoid burial in plastic bags as this impedes decomposition and may trap fluids.
- Double-bagging and airtight containers are required for other waste not buried on-site.
- Pit loading should occur from a designated clean side, with clear separation from other farm operations.
- All equipment used in burial must be cleaned and disinfected daily and not reused for non-HPAI tasks without thorough decontamination. See Appendix C Decontamination Guidelines.

Disease organism survival in soil and burial environments

As an example, the HPAI virus survival time in soil depends on temperature, moisture, and organic content¹:

- At 20°C, HPAI virus can survive in soil for up to 18 days.
- In cooler conditions (4°C), survival extends significantly, up to 120 days in soiled litter and soil, and 160 days in feathers.
- In water, the virus may persist for 21 days at 20°C, and up to a year in ice at -20°C.

These figures highlight the importance of deep burial, adequate soil cover, and long-term site monitoring to prevent environmental release or scavenger access.

¹ [Survival time of avian influenza viruses - inspection.canada.ca](https://inspection.canada.ca)

Appendix B: Examples of specific burial types

Burial is a primary method for disposing infected carcasses and contaminated materials (e.g. litter, PPE, feed, packaging), particularly when incineration or composting is not feasible. The method must be biosecure, environmentally responsible and compliant with regional council requirements.

On-site burial

Best for: farms with sufficient land, appropriate soil conditions and low water table.

Types of burial pits:

- **Trench burial:** suitable for poultry and small animals. Narrow and deep trenches allow for efficient stacking and containment.
- **Mass burial pits:** used for large-scale mortality events. Require more space and may include liners.

Design features:

- Minimum 2 metres of compacted soil cover above carcasses.
- Diversion banks and cut-off drain to prevent stormwater ingress.
- Separation of topsoil and subsoil for site restoration.
- No lime should be used as it interferes with pathogen degradation (the exception is when covering eggs to reduce odour).

Lined burial pits

Best for: sensitive environments or high-risk materials.

- Use geosynthetic clay liners (GCLs) to prevent leachate escape.
- Include leachate extraction systems and smoother side slopes.
- Require specialist installation and council approval.

Off-site burial (council-approved landfills)

Best for: when on-site burial is not possible due to land constraints or environmental risks.

- Must follow biosecure transport guidelines.
- Materials transported in sealed, leak-proof containers.
- Disposal coordinated with local council and landfill operators.

Appendix C: Step-by-step instructions

☒ Pre-Start Checklist

Action	Complete (Yes / No)
Health and safety plan in place	
Site map prepared	
Disposal plan (who, how, when) for the different contaminated materials	
Personnel skilled with the training, qualification or experience in burial activities	
Equipment checked	
Liner installed	
Stormwater controls in place	
Water table depth confirmed	

Step 1: PPE Requirements

All personnel must wear:

- Gumboots;
- Long-sleeved gloves;
- Coveralls;
- Safety glasses or full-face shield;
- N95 mask.

Step 2: Prepare the disposal site

1. Pest control

- Place pest control traps and bait stations around the burial site to prevent contact by insects, wild animals and pets.

2. Excavation

Use appropriate machinery (20–25 tonne diggers recommended) to dig the pit or trench. For poultry:

- Dig as deep as possible without breaching the water table.
- Trench width should not exceed 3 metres.
- Length depends on carcass volume and available space.
- Maintain 2 metres of free space between carcasses and the top edge of the pit.
- Pit slope should be based on soil type and contractor advice.

3. Stormwater management

- Construct diversion banks to prevent stormwater from entering the pit.
- Consider installing a surface water cut-off drain if heavy rainfall is expected.

4. Soil handling

- Separate topsoil from subsoil. Store topsoil at the ends or along one side of the pit for later use in covering and grass regeneration.

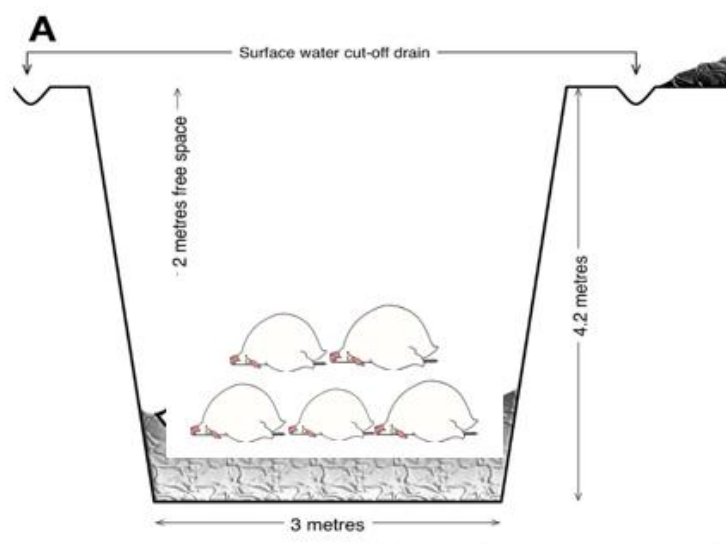
5. Access setup

- Level one long side of the pit and keep it clear of fill. This side will be used for loading carcasses.

6. Liner installation (if applicable)

- If a liner is required, refer to the liner system protocols. GCL liners are preferred for ease of installation and performance.

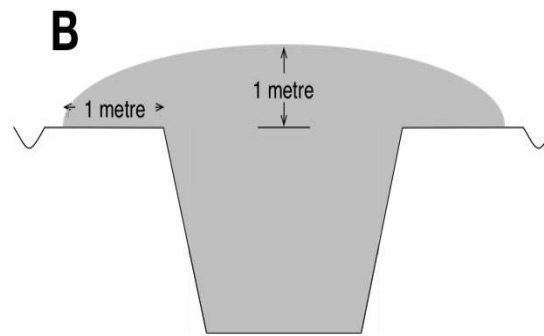
Diagram A: Example of a cross-section of a burial pit, showing the drainage channels and required 2m space. Note the dimensions are for disposal of cattle and sheep and will differ for poultry.



Step 3: Bury carcasses and contaminated materials

1. Transport carcasses to the levelled side of the pit using biosecure vehicles.
2. Load carcasses into the pit, ensuring 2 metres of soil cover will be possible.
3. Stack carcasses as per Diagram A.
4. Cover carcasses to ground level with 2 metres of compacted soil.
5. Do not use lime as it interferes with pathogen degradation.
6. Heap an additional 1 metre of surplus soil over the pit to allow for settling (see Diagram B).
7. After subsidence, replace any unused topsoil and consider re-grassing before fencing off the site.

Diagram B: An example of a cross section of a burial pit with cover soil.



Step 4: Biosecurity considerations

- All work must aim to minimise pathogen spread within and beyond the site.
- Maintain clear separation between disease related and other materials/equipment.
- Clean and disinfect all equipment and vehicles:
 - Before reuse on other tasks.
 - At the end of each operational day.

Step 5: Post-burial monitoring

Inspect the burial site:

- Weekly for the first month;
- Monthly thereafter;
- After extreme weather events or earthquakes.

If you observe:

- Cracks or burrowing → fill with soil;
- Poor vegetation → reseed;
- Water pooling → inspect drainage and regrade if needed.

Step 6: Disposal of other waste

For waste not suitable for burial:

1. Place waste in thick black plastic bags.
2. Seal with zip ties and double bag.
3. Place second bag in airtight containers.
4. Dispose of according to the agreed Disease Response Biosecurity Plan.

Step 7: Liner systems (if required)

Lined pits require:

- Smoother side slopes;
- Installation of geosynthetic clay liners (GCLs);
- Cover aggregate and leachate extraction systems.

GCLs are preferred over high-density polyethylene (HDPE) or Ethylene Propylene Diene Monomer (EPDM) due to faster installation and reduced need for welding or protective layers. However, bentonite in GCLs can expand with rainfall, so cover material must be placed promptly.

Action: follow the direction of the specialist liner installer.

Step 8: Off-site burial (if applicable)

If burial occurs off-site:

- Follow all steps above;
- Apply the biosecure transport guideline and work instructions;
- Ensure containment during transport to prevent pathogen spread.

Appendix D: Audit checklist

GENERAL

Disposal site name (for off-site):			
Disposal site address (for off-site):			
Disposal site contact name (for off-site):		Contact Ph:	
Farm contact name:		Contact Ph:	
Farm address			
Trucking company		Truck driver name	
Movement Control Permit/s Number/s (as required) (for off- site)			

DOCUMENTATION

Document	Comment	Acceptable Y/N
Procedures (SOP)		
Contract related Statement of Work (where appropriate)		
Site Health and safety procedures		
Movement control permits, if required		
Resource consent (if required)		

RECORDS

Records	Comment	Acceptable Y/N
Record of required buffer distances		
Record of pit dimensions (required depth)		
Record of soil coverage (thickness) Monitoring records for equipment cleaning and disinfection at the end of the day.		
Monitoring records for post burial monitoring, monthly or after adverse events		
For off-site, biosecure transport verification checklist completed		

REALITY (confirm that what is observed is consistent with the procedures and records viewed)

Section	Action or observation	Comment	Acceptable Y/N
Buffer distances	Required distance from property boundary as per regional plan.		
	Required distance from well or surface water body		
Pit dimensions	Minimum 2m separation between pit base and highest seasonal water table.		
Soil coverage thickness	Required soil coverage thickness. Check for presence of odour, which could indicate poor coverage.		
Plant cleaning	Disease spread risk, check water containment		
Ongoing monitoring	Evidence of ongoing monitoring occurring		

Note: Photos/videos that are date/time stamped are required to demonstrate compliance if verifiers are not present on site when activities are undertaken.

Appendix E: Example SOP: disposal by burial (on-site) (farmer/operator use only)

Purpose

To ensure contaminated material is safely buried onsite to prevent the spread of infectious agents, in accordance with the disposal guideline.

Scope

This SOP applies to all burial activities involving carcasses, eggs, litter, or contaminated infrastructure during a biosecurity response.

Responsibilities

- **Farm operator:** Oversees burial activities and ensures SOP compliance.
- **Contractors:** Carry out excavation, loading, and burial as directed.
- **Site supervisor:** Coordinates activities, monitors safety, and maintains records.

Materials and equipment

- Excavator or front-end loader.
- PPE (coveralls, gloves, boots, masks).
- Polythene liners and cable ties.
- Lime (for egg coverage only).
- Spill kit and disinfectant.
- Signage and fencing for red line boundary.
- Lighting (if operating in low visibility).
- Burial Verification Checklist.

Procedure

1. Site preparation

- Select a suitable burial location.
- Control pests and dig pit to required depth and volume.
- Check drainage and access for vehicles.
- Establish red line boundary and signage.

2. Moving contaminated material

- Use sealed bins or containers.
- Wear PPE and follow hygiene protocols.
- Avoid spills and cross-contamination.
- Disinfect gear and vehicles before and after movement.

3. Filling the Pit and Covering the Material

- Place material carefully to avoid spread.
- Compact and seal the pit.

4. Securing the Burial Site

- Fence off and restrict access.
- Post signage.
- Record disposal details and clean equipment.

5. Monitoring the Burial Site

- Inspect weekly for the first month, then monthly.
- Check after heavy rain, flooding, or earthquakes.
- Look for signs of disturbance, leakage, or pest activity.

Records

- Burial verification checklist.
- Disposal logs (volume, type, date).
- Photos or video of burial process.
- PPE disposal records.
- Post-burial inspection reports.
- Corrective and preventative actions.

Appendix F: Fictional illustrative scenario (farmer/operator use only)

On-farm burial – my HPAI experience

I run a small free-range egg farm with 3,000 hens. When HPAI hit, I had to act fast. Luckily, I already had resource consent for burial, so I could move quickly.

First, I fenced off the infected area using waratah standards and electric tape to mark the red line. Everything inside was contaminated e.g. carcasses, eggs, litter, even the belts. I suited up in full PPE and briefed everyone helping.

We started with the carcasses, about 6,000 kg. I double-bagged them, sprayed them with disinfectant, and loaded them into sealed bins. The eggs went into lined containers, sealed tight. Litter was scooped into bulk bins and sprayed down. Anything I couldn't clean, like the egg belts, was bagged and sent to landfill.

I had to hire in machinery to move the material, which added cost but was essential to get the job done safely. I dug the pit deep, checked drainage, and made sure machinery could get in and out without crossing clean zones. Once everything was ready, we moved the material carefully, avoiding spills. Carcasses and eggs went in first, then litter. I covered everything with soil, compacted the pit, and sealed it.

After that, I fenced off the burial site and posted signs. I kept detailed records including volumes, dates, inspections. For the next month, I checked the site weekly, then monthly, and after heavy rain. I looked for leaks, pest activity, or any disturbance.

It wasn't easy, but planning ahead and sticking to the plan kept the process safe and compliant. Hiring the right gear and setting up proper fencing made all the difference.

Off-site landfill disposal – my HPAI experience

I manage land for a processor that owns the birds, that is 40,000 broilers across multiple sites. When HPAI hit, we had a big problem. We couldn't bury on-site because the water table was too high for a safe pit. That meant landfill was our only option.

The processor's stock manager took the lead, coordinating with me, the transport company, and the landfill. My job was to make sure everything on the farm was ready and secure.

We started by locking down the infected site. I marked the red line around the sheds and set up biosecurity controls. Everyone wore full PPE. We briefed drivers and loaders on the health and safety plan to make sure there were no shortcuts.

Moving 15 tonnes of carcasses was no small job. We loaded them into bulk bin liner trucks, installed polythene liners, and sealed every leak point. Before sealing, we sprayed carcasses with disinfectant to reduce risk. Each truck had hazardous goods signage and a pre-approved route. After loading, we cleaned the vehicle exterior before it left the property. The litter, about 5 tonnes, went into separate sealed containers with absorbent material at the base. Same process: disinfect, seal, clean. It's worth noting none of the drivers could get out of their cabs.

At the landfill, everything was tipped and covered immediately. Trucks were washed down and disinfected before leaving. Drivers carried spill kits and knew exactly what to do if something went wrong.

We kept detailed records e.g. movement permits, disposal logs, cleaning checklists. It was a big operation but planning and coordination made it work. We couldn't control the water table, but we controlled everything else.