



DEPOPULATION

CAPTIVE BOLT WORK INSTRUCTION & CHECKLIST

Used for: Large birds such as emu, ostrich, turkey, geese and adult poultry



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 humanely and effectively depopulating birds infected or suspected of having a notifiable disease such as Highly Pathogenic Avian Influenza (HPAI), using a captive bolt.

Why this matters:

This process protects birds' welfare and quickly removes affected birds to help stop the disease from spreading.

🔗 Please read this document in conjunction with the **Standard, Depopulation Guidelines** 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 captive bolts 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 captive bolt depopulation properly, first figure out:

- **how** many birds need to be depopulated;
- **what** type and size of birds they are (e.g. broilers, turkeys, ostrich);
- **where** they are located and how they'll be accessed.

🔗 For farmers / operators, you can use Section B1 of the Disease Response Biosecurity Plan Guidebook and Template, or the online Disease Response Biosecurity Plan Builder to help record this information.

Understanding the challenge helps you:

- Select the right number and type of captive bolt equipment (penetrating vs non-penetrating).
 - Ensure there are enough skilled personnel with the training, qualification or experience, to carry out the task humanely and efficiently.
 - Plan for safe bird handling and movement.
 - Develop a clear health and safety plan, including fatigue management and PPE.
- ☒ Set up a clean/dirty line and decontamination station for people and equipment.
 - ☒ Ensure all personnel are skilled with the training, qualification or experience in humane handling and use of the captive bolt depopulation techniques.
 - ☒ Use appropriate restraint methods to minimise stress and injury.
 - ☒ Monitor for signs of ineffective stunning and take immediate corrective action.
 - ☒ Record numbers and outcomes for traceability and reporting.

Work as a team

Farmers/operators, vets, MPI, and depopulation contractors need to coordinate to:

- align on timing and logistics;
- ensure animal welfare standards are met;
- link depopulation with disposal and site decontamination plans.

- ✂ **See Appendix A** for the key information about the captive bolt plan.
- ✂ **See Appendix B** for captive bolt examples, to help plan your detailed approach.
- ✂ **See Appendix C** for step-by-step instructions on how to carry out captive bolt depopulation.

2.1 Materials and personnel

These are the core elements that support good practice. You may need to scale up depending on the situation.

Category	Item
 Personal Protective Equipment (PPE)	• Personal Protective Equipment as outlined in the Health New Zealand guidance (incl. hearing protection). • Antiseptic wipes. • Disinfectant and spray bottle. • First aid kit. • Paper towels.
 Equipment & personnel	• Captive bolt: ○ Skilled personnel with training, qualification or experience to use the captive bolt and perform cervical dislocation if needed. ○ Enough captive bolt units and correct caliber charges.

2.2 Health and safety actions

The on-site **written, health and safety plan** for using a captive bolt for depopulation activities at the infected site, needs to cover risks associated with captive bolt use during a disease incursion. If you're working with **contractors**, 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.

The 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 birds;**
- **safe use of the captive bolt;**
- **movement controls** for vehicle, equipment and personnel movement through high-risk zones (e.g. near sheds, water sources, or red line boundaries);
- **PPE requirements** for all staff involved in the use of captive bolts.

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.
- ☑ Use trained and competent captive bolt operators and ensure personnel can manage the volume. This includes personnel being able to take breaks.
- ☑ Check each bird for effective euthanasia and reapply captive bolt (or alternative method such as neck dislocation) if needed.
- ☑ Wear correct PPE at all times.
- ☑ Stick to all biosecurity procedures, including recording and reporting any new risks.
- ☑ Handle birds calmly and gently at all times to ensure both animal welfare and minimise risks to personnel.
- ☑ Move spent birds to disposal vehicles without contaminating the environment. Follow the *Disposal Guideline*, which includes biosecure transport.

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

2.3 Captive bolt procedures

Where there is one, use the site's SOP for captive bolt depopulation. Before starting, check it against the *Depopulation Guideline and Standard*, to ensure it meets required standards. If it doesn't, update it or arrange an alternative method. If no SOP exists, create one using the *Depopulation Guideline* as the minimum standard.

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

🔗 **See Appendix D** for the audit checklist that helps to assess if all the required steps have been covered.

For farmers/operators:

🔗 **See Appendices C and E** for help with writing your captive bolt SOP.

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

Tip: Plan depopulation and disposal together to meet disposal timelines. Follow the *Disposal Guideline and Standard* which includes biosecure transport, when disposing of birds.

3. Appendices

Appendix A: Key information

Purpose

All captive bolts are designed to cause severe brain trauma, resulting in immediate, irreversible unconsciousness.

Captive bolt options

Several poultry-specific captive bolts are available in New Zealand. These may be penetrative or non-penetrative, and powered by cartridges, compressed air, or springs.

Use as a secondary method

Captive bolt is also the recommended back-up method when gas or foam depopulation isn't suitable.

Key specifications for humane killing

- Use a captive bolt caliber and air pressure appropriate to the age and type of poultry being depopulated.
- Cartridge-powered models may overheat with continuous use. Air-powered models are better for large-scale depopulation.
- Each bird must be individually restrained, increasing zoonotic (animal, human disease transmission) risk.
- Ensure operators are skilled with training, qualification or experience to safely and effectively use a captive bolt and follow safety protocols.

Confirming death

Always check for signs of life (e.g., no rhythmic breathing, no movement, relaxed body, fixed, dilated pupils and no eye reflexes). If present, apply a secondary method such as cervical dislocation or bleeding.

For reference:

Signs of unconsciousness:

- Loss of posture, muscle tone, relaxed, limp body.
- No rhythmic breathing (check cloaca for movement to indicate rhythmic breathing).
- Absence of third eyelid (nictitating membrane) reflex or spontaneous blinking.
- Wings drooping.
- Absence of vocalisation.

Signs of consciousness or return to consciousness:

- Rhythmic breathing.
- Swallowing.
- Blinking (third eyelid) and third eyelid reflex.
- Wings not drooping / body movements.
- Righting reflex.
- Vocalisation.

Health and safety

- Handling infected birds increases risk to operators. Provide full PPE and ensure all staff are skilled with the training, qualification or experience in safe handling and depopulation techniques.
- This method of depopulation is visually unpleasant and may cause psychological stress or injury. Monitor personnel wellbeing, ensure adequate breaks and offer support.

Minimum standard

Under the *New Zealand Code of Welfare: Layer Hens (Minimum Standard 17 - Humane Destruction) & Meat Chickens (Minimum Standard 16 – Humane Destruction)*:

- Staff must be competent and trained or adequately supervised and handle birds gently and calmly.
- Equipment must be well maintained, lubricated, checked before use, and not overloaded to ensure effective, efficient operation.

Appendix B: Examples of specific captive bolts

Penetrating captive bolt devices (NZ)

1. Shoof Captive Bolt Slaughter Device Kit

- **Type:** Penetrating.
- **Use:** Designed for large poultry (chickens, ducks, turkeys up to ~16 kg) and small animals.
- **Features:**
 - Captive bolt: 4.7 mm diameter, 25 mm length.
 - Manually loaded.
 - Device length: 24 cm.
- **Available from:** [Shoof Direct NZ](#)



Non-penetrating captive bolt devices

1. CASH® Small Animal Tool (Accles & Shelvoke)

- **Type:** Non-penetrating.
- **Use:** Poultry and small animals.
- **Features:**
 - Mushroom-shaped concussion head.
 - Lightweight, easy to operate.
 - CE compliant and low maintenance.
- **More info:** [Accles & Shelvoke – CASH® Small Animal Tool](#)



Appendix C: Step-by-step instructions

☒ Pre-Start Checklist

Action	Complete (Yes / No)
Health and safety plan in place	
Site map prepared	
Depopulation plan (who, how, when) with bird age considered	
Staff skilled with the training, qualification or experience in captive bolt use	
Equipment checked and fit for purpose	
Roster includes rest breaks	
Has emotional support been provided or offered?	

Step 1: PPE requirements

All personnel must wear:

- gumboots;
- long-sleeved gloves;
- coveralls;
- safety glasses or full-face shield;
- N95 mask.

Additional PPE:

- When working inside the shed, use a face with ammonia-filtration cartridges.

Step 2: Animal welfare standards

- Handle birds gently to avoid injury and distress.
- Minimise stress with calm environments and skilled staff.

Step 3: Bird handling

- Depopulate sick/injured birds immediately.
- Keep shed calm and dimly lit.
- Minimise carrying distance.
- Preferably catch one bird at a time, wings down.
- Hold a maximum of four birds per hand to avoid bone breaks.

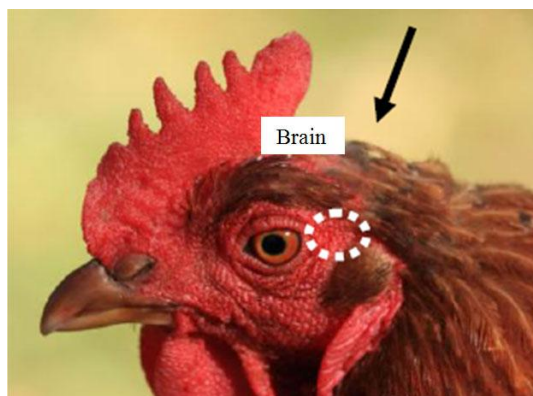
Step 4: Captive bolt use

- Approach the bird's head from the top.
- Point and discharge the captive bolt device directly at the centre of the top of the bird's head medial (central) to and just behind the eyes (as illustrated below).

Positioning of captive bolt:



The brain is located in the centre of the bird's head (skull), medial to and just behind the eyes:



Step 5: Confirming death

Always check for signs of life (e.g., no rhythmic breathing, no movement, relaxed body, fixed, dilated pupils and no eye reflexes).

If signs of life remain:

- apply a secondary method such as cervical dislocation or bleeding.

Appendix D: Audit checklist

GENERAL

Farm contact name:		Contact ph:	
Farm and address:			
Movement control permit/s number/s (as required):			

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		

RECORDS

Records	Comment	Acceptable Y/N
Numbers of adults depopulated		
Training records for captive bolt operators		
Monitoring records of the effectiveness of captive bolt		
Record of corrective actions if captive bolt insufficient for euthanasia		
Monitoring of loading of disposal vehicle (as applicable)		

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

Section	Action	Comment	Acceptable Y/N
Depopulation	Observe the effectiveness of captive bolt		
	Observation of corrective actions if captive bolt insufficient for euthanasia		
	Observe the loading of the disposal vehicle (as applicable)		

Appendix E: Example SOP: Depopulation by captive bolt (farmer/operator use only)

Purpose

To ensure the humane, safe, and effective depopulation of birds infected with, or suspected of having, a notifiable disease such as Highly Pathogenic Avian Influenza (HPAI), using captive bolt devices. This supports disease containment, protects animal welfare, and minimises risks to human health and the environment.

Scope

This SOP applies to all captive bolt depopulation activities involving poultry during a biosecurity response on infected premises.

Responsibilities

- **Farm operator:** Oversees depopulation activities and ensures SOP compliance.
- **Depopulation team leader:** Coordinates personnel, equipment, and safety procedures.
- **Trained operators:** Carry out humane depopulation using captive bolt devices.
- **Support staff:** Assist with bird handling, movement, and record-keeping.

Materials and equipment

- **Captive bolt devices** (penetrating or non-penetrating, as appropriate).
- **Correct calibre cartridges or power source** (as per device specifications).
- **Restraint equipment** (e.g. cones, crates).
- **PPE:**
 - Coveralls
 - Gloves
 - N95 masks
 - Eye protection
 - Hearing protection
- **Disinfectant and cleaning supplies.**
- **First aid kit.**
- **Record sheets and verification checklist.**

Procedure

1. Conduct a pre-operation briefing covering:

- PPE requirements;
- fatigue management and rest breaks;
- emergency procedures;
- biosecurity protocols;
- animal welfare expectations.

2. Depopulation process:

- Handle birds calmly and gently.
- Restrain birds appropriately to minimise stress and injury.
- Apply captive bolt to the correct anatomical location.
- Confirm insensibility and death before moving birds.
- Apply secondary method (e.g. cervical dislocation) if required.
- Record each bird's outcome and any corrective actions taken.

3. Post-depopulation:

- Move carcasses to disposal site using biosecure transport.
- Clean and disinfect all equipment and PPE.
- Complete all required records and verification checklists.
- Debrief team and report any incidents or issues.

Records

- Depopulation Verification Checklist.
- Daily activity logs.
- PPE and waste disposal records.
- Training records for operators.
- Corrective and preventative action reports.
- Movement control permits (if applicable).

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

On-Farm Captive Bolt Depopulation – My Bird Flu Response¹

The day MPI confirmed bird flu on our farm, everything changed. We had 4,200 turkeys in two big sheds, and the goal was clear: get them out fast to stop the spread. Gas wasn't an option because of the ventilation setup, so we went with captive bolt.

I thought we'd be done in a day. We weren't. It took 36 hours over two nights. Here's why:

First, some of our regular catchers refused to come inside once they heard the shed was HPAI-positive. I don't blame them, but it left us short-handed. The local community was great and extra people volunteered, but most had never used a captive bolt. We trained them on the spot and paired them with experienced guys. That slowed us down.

Then there was the heat. It was the middle of summer, and it was hot. We switched to night shifts to keep everyone safe, but even then, working in full PPE was brutal. We had to stop every 45 minutes for water breaks and to cool down. You can't rush when people are sweating in coveralls and masks.

The gear didn't make it easier. Captive bolt guns overheated after continuous use, so we rotated them and waited for cool-downs. That added more time.

We kept going, calm handling, welfare checks, disinfecting everything. By the end, we were exhausted, but we did it right. Every bird was checked for insensibility, and we followed the biosecurity plan to the letter.

What I learned?

- Always plan for extra people and training time.
- Have spare captive bolt units ready.
- Build in breaks - PPE and heat will slow you down.
- If it's hot, work at night.
- Keep everyone talking and working as a team.

¹ This is a fictional scenario for illustrative purposes only.