

## Aerial tasks in natural disasters

Agriculture and Animal Services Functional Area (AASFA) in natural disasters may use aviation assets in combination with ground field activities. Aviation tasks in natural disasters may include:

1. Aerial surveillance:
  - identifying and/or validating impact to animals and agriculture
  - identifying animal welfare issues (e.g. water/feed access, safe location, injury)
  - collecting data to enable future planning of response and recovery activities
  - assisting with locating and reconnecting owners/managers with missing animals.
2. Aerial transport:
  - fodder drops to isolated animals in nets by remote release sling load
  - relocating animals in stock crates (e.g. sheep) by sling load, or in the body of the aircraft (e.g. pets and working dogs)
  - moving equipment (e.g. quad/ATV, portable yards) by sling loading to assist in mustering or animal relocation
  - transporting people to muster stock and cut fences/open gates to create access paths
  - Note: Combat agency (e.g. NSW State Emergency Service (SES)) may deliver supplies on behalf of AASFA. In these cases, they will be operating using their procedures. AASFA responsibility is limited to the supply of the items to the combat agency for distribution.
3. Aerial mustering is the mustering of animals to a safe area.
4. Aerial destruction is the shooting of animals on animal welfare grounds from a helicopter and will only be considered when all other options are exhausted.

### Roles and responsibilities

The roles required and response structure will depend on the size and complexity of the emergency. Refer to the Operations section of the [DPI emergency response roles](#).

AASFA personnel participating in aerial tasks must be appropriately trained and skilled to perform the assigned task, for example:

- Surveillance task – assessment is conducted by a person able to assess animal welfare (e.g. Veterinarian, RSPCA inspector, experienced Biosecurity Officer, accredited shooter e.g. Feral Animal Aerial Shooting Team (FAAST) shooter)
- Transport task - on ground mustering, loading and unloading stock crates, cutting fences, opening gates can be conducted by the landholder (passenger) or qualified AASFA personnel, but they must have animal handling experience
- Transport task – sling loads require qualified crew i.e. dogman (from the air operator) to load the net and connect the sling to the aircraft
- Shooting task – destruction team consists of a qualified pilot and shooter (e.g. FAAST), and air crew (animal welfare). Air crew (animal welfare) is usually a veterinarian but does not have to be if written permission to destroy the animals has been provided by the owner/manager

**No AASFA personnel are to be on board an aircraft during sling loading and mustering activities under any circumstances.**

Contracted aviation operators including crew supplied by the aviation company (e.g. sling load operators to attach/detach loads) are required to be sourced through NSW Rural Fire Service State Air Desk (NSW RFS SAD).

## Approval of aviation tasks

Aerial tasks are conducted by aviation trained personnel in accordance with [NSW DPI aviation procedures, task profiles and risk assessments](#). The four task profiles used in natural disasters are [aerial surveillance](#), [aerial transport](#), [aerial mustering](#) and [aerial shooting](#). Task types may only be combined on the same flight when task profile requirements are met, crew are qualified and the aircraft task operations plan is approved.

Approval of aviation tasks, prior to the tasking of aircraft and crew/passengers, requires:

- a) existing task profile
- b) completion of [Task description and risk assessment](#) and task request (in WebEOC)
- c) approval at LCC where suitable aviation assets are available
  - LCC may need to request (by task request) suitable aviation assets from the DPI State Coordination Centre for deployment by NSW RFS if not already available
- d) qualified personnel to conduct task – refer to [roles and responsibilities](#) (above)

## Tasking of aircraft

Tasking of aircraft and crew/passengers (where relevant) requires:

- a) [aircraft task operations plan](#) developed in conjunction with pilot, operator and other stakeholders e.g. landholders, combat agency
- b) [task briefing](#) of pilot and crew (where relevant) to be conducted by AASFA Operations Officer
- c) [safety briefing](#) by pilot and completion of [passenger manifest](#)
- d) completion of task according the procedure [Management of aviation operations](#) including flight operations return, observation report, [debrief](#)
- e) flight following conducted as per task profile and task operations plan

## Pre-flight preparations

AASFA crew require:

- Approved flight plan and maps (from combat agency, Planning or Operations functions or local sources) to familiarise with the region to be assessed, e.g. NSW State Emergency Services (NSW SES) 'flood extent maps'
- [Resources](#) available and checked
- Information from the landholder including last known location of animals, local (aerial) hazards, terrain, landmarks, species and numbers of animals
- Record of consent from owner/manager to move animals, cut fences or euthanize

## Flight(s) conducted for each task type

### Surveillance – animal welfare assessment

1. Conduct survey systematically in a grid pattern or as determined to be most efficient and effective in the area of operation
  - a. Use a GPS track log to record coverage
  - b. Maintain altitude according to the pre-approved [aircraft task operations plan](#)
    - i. assessment of animals is best conducted between 300 and 400 feet AO (above obstacles) but only after conducting a pre-descent risk assessment and visual reconnaissance of the area
    - ii. Only descend to 200 feet AO when necessary to assess animals for welfare purposes and only after conducting a pre-descent risk assessment and visual reconnaissance of the area
  - c. Animals affected by flood water or bush fire include
    - i. Animals standing in water or burnt ground
    - ii. Animals stranded on islands
    - iii. Animals likely to be inundated by rising floodwater but lacking a clear escape path
2. Complete the [field activities log](#)
  - a. Identify at risk animals and record locations using waypoints on GPS tracking device
  - b. Take photos/videos of at risk animals
  - c. Assess animals (refer to Appendix 1 [aerial assessment of animals](#) for details)
  - d. Provide a [recommendation for further action](#) (Appendix 2)

## Surveillance – natural disasters

1. Conduct survey systematically in a grid pattern or as determined to be most efficient and effective in the area of operation
  - a. Use a GPS track log to record coverage
  - b. Maintain altitude according to the pre-approved [aircraft task operations plan](#)
  - c. Make observations, record data and take photos which:
    - i. identifies locations of animals and carcasses
    - ii. estimates impact or injury to animals, agricultural production and infrastructure
    - iii. supports future response and recovery activities
2. Complete the [field activities log](#)

## Aerial transport – sling loads

1. AASFA personnel notify owner/manager of delivery including time and location
2. Liaise with pilot and air operator crew to organise responsibilities and process for loading task
  - a. May require on ground support with animal handling, provision of equipment/supplies (e.g. fodder)
3. Confirm loads and destination with pilot
4. Complete the [AASFA distribution log](#)

## Aerial transport –in aircraft

1. Transport flight is by the safest, most direct and efficient route which may involve multiple stops (where multiple requests for assistance are being addressed)
2. AASFA crew/passengers may be required to travel by aircraft to one or more locations. Transport is required to enable ground tasks to be completed, including:
  - a. Mustering animals
  - b. Loading animals into crates (but not attach sling to aircraft)
  - c. Opening gates and/or cut fences to create safe passage for stock
3. Liaise with pilot to organise load of equipment, supplies and caged animals
  - a. Complete [field activities log](#) for rescue tasks
  - b. Complete [AASFA distribution log](#) when feed/water are provided

## Aerial mustering

1. AASFA personnel notify owner/manager of movement of animals by aerial muster including time and location
2. Liaise with pilot to organise task completion

## Aerial shooting

1. Conduct flights to ensure humane destruction of animals according to the guide [Humane destruction of stock](#) and FAAST manual
2. Complete the [field activities log](#)

## Post flight

1. Upon landing ensure the pilot completes the Flight Operations Return, and sign
2. Notify supervisor if immediate action is required
3. Update event log
4. [Download and label photos and videos](#)
5. Report to supervisor
  - a. Conduct [debrief](#) including reporting any issues, [accidents and incidents](#)
  - b. Submit data sheets including waypoint data
  - c. Submit aviation records – track logs, copy of Flight Operations Return
6. Restock, return or maintain resources used during the task

## Resources

Suggested resources that may be required for AASFA field teams. Resource requirements will vary with task, location and impact of the natural disaster.

Item	Description
<b>Aviation specific PPE</b>	<ul style="list-style-type: none"> <li>aviation standard helmet with built in communications and visor (note - it is advisable to remove earrings before donning helmet)</li> <li>Nomex or equivalent flight suit</li> <li>aviation gloves (when required)</li> <li>aviation standard harness for aerial shooter</li> </ul>
<b>Clothing for aviation personnel</b>	Flammable resistant (e.g. cotton) clothing including underwear beneath flight suit Leather, ankle high, lace up boots
<b>Communication/safety devices</b>	Suitable for the area, e.g. mobile phones, radios (on GRN), satellite phones, personal locating beacon (PLB) or tracking device/App for remote/isolated work
<b>Water and food</b>	Food (required for survival kit) and water (dehydration is common, take at least 1.5L) for personnel to assist in managing fatigue
<b>PPE</b>	Suitable for the task and conditions, e.g. sun/wind protection (hat, sunscreen, lip balm), wet weather gear, insect repellent (refer to the <a href="#">safety</a> risk assessment/safe work method statement)
<b>First aid kit</b>	Suitable for location/conditions, may include additions (e.g. snake bite kit)
<b>Safety</b>	Torch and pocket knife - required for survival kit
<b>Medication</b>	Travel sickness medication (recommended) Eye drops (optional)
<b>Identification</b>	AASFA high-visibility vest and EM identification card Authorised Officer card (where relevant)
<b>Camera</b>	Camera (zoom lens preferable) – to photograph animals at risk and proximity to landmarks. This may assist landholders in locating stock on the ground. Phones and tablets maybe used where suitable.
<b>Data collection</b>	<ul style="list-style-type: none"> <li>Handheld device with GPS capability or access to waypoint data from aircraft - to record the location of animals at risk, landmarks and evacuation points</li> <li>Clip board, spare paper and pen/s</li> <li>Spare batteries/chargers for GPS/mobile device</li> </ul>
<b>Information</b>	Hazard information, likely location of animals, local area maps (maybe available on recording devices) Safe location for rescued animals
<b>Contact details</b>	Contact details to provide information, in case of accident and report in when landed e.g. property owners, FCP/LCC, supervisor, flight following contact, emergency services, other teams
<b>Data collection forms</b>	Event log, Field activities log
<b>Destruction gear</b>	Firearms and ammunition suitable for species, age, gender, number

## Safety

Safety issues must be addressed by implementing appropriate controls. Risks may include:

- [Animal destruction and disposal activities in emergencies](#)
- [Animal handling in emergencies](#)
- [Aviation management](#) – refer to the appropriate task profile
- [Fatigue management](#)
- [Manual handling](#)
- [Moving livestock using external sling loads](#)
- [Off-road vehicle operation – quad/motor bikes, ATV](#)
- [Use of firearms in emergencies](#)
- [Remote and isolated work](#)
- [Working around plant and equipment](#)

## Further information

NSW Department of Primary Industries – [Operations resources and publications](#)  
[Animal welfare in flood crisis](#)

### Appendix 1 - Aerial assessment of animals

1. During the assessment of animals data collected may include:
  - Number and type of animals affected
  - Health of the animals (see Table 1 for clinical signs mainly in sheep)
  - Estimated time the animals have been/will be affected by floodwater
  - Evidence of floodwater rising or falling, flow rate and water depth
  - Availability of high ground and forage material and possible movement routes
  - Suitability of sites for potential fodder drops
2. Take photographs with a camera (with zoom lens) or phone to avoid descending lower than necessary, and to illustrate animal's situation and surrounding landmarks.
  - a. Photos with landmarks will assist landholders and ASSFA field teams finding animals

**Table 1: Factors to consider when assessing the health of animals in floodwater**

Health Indicators	Considerations
<b>Length of time standing in water</b>	It is probable that sheep standing in water for longer than 5 days are at risk of their integument being compromised. This may lead to severe skin and hoof lesions, infections and septicaemia.
<b>Demeanour</b>	Animals that are bright and alert that look up at the aircraft have a better prognosis.
<b>Avoidance behaviour</b>	Animals making attempts to avoid low flying aircraft have a better prognosis than those who don't.
<b>Mobility</b>	Recumbent animals that don't respond to stimuli have a poor prognosis. Prognosis is good for animals that are mobile. Bugged animals are easily exhausted and have a poor prognosis.
<b>Wool length and fleece quality</b>	Sheep in full wool become water-logged easily and succumb to exhaustion more quickly than those with little wool. Fleeces with a green tinge indicate wetting for longer than 7 days. Evidence of flystrike is a poor prognostic indicator.
<b>Neurological signs</b>	Neurological signs often indicate metabolic disease. Animals showing neurological signs (eg paddling) have a poor prognosis.
<b>Mob behaviour</b>	Sheep have strong mob instincts. If they are scattered, it indicates a poor prognosis.
<b>Dead animals in the vicinity</b>	Poor prognostic indicator.
<b>Injuries</b>	Animals with injuries often have a poor prognosis.

## Appendix 2 - Recommendations for further action

Recommendations to resolve the animal welfare situation must consider the safety of people involved and the ongoing welfare of the animals.

In all cases, the owner of the animals will be determined from the GPS co-ordinates and notified. Options for resolution of the situation are detailed in Table 2.

**Table 2: Recommendations for resolving animal welfare situations**

Recommendation	Details
<b>Creation of access paths</b>	Cutting a fence or opening gates may alleviate some situations.
<b>Retrieval/mustering to higher ground with adequate feed</b>	<p>Access paths for retrieval/mustering should be determined during the aerial surveillance. Retrieval of stock can occur via vehicle (quad/4WD/tractor) or via boat. Helicopters can be used to fly stock handlers and quad bikes into the area where appropriate.</p> <p>Mustering options include via quad bike, horse or by foot. For cattle, mustering via helicopter can be considered. Be sure to consider the current health condition of the livestock and the terrain before recommending this option. Debilitated stock may be unable to move even short distances through mud or water to higher ground.</p> <p>Photographs of access paths and other landmarks can be particularly useful for landholders when undertaking this option.</p>
<b>Fodder drops</b>	<p>Where retrieval is not possible and stock are standing on an island that <b>will not</b> be inundated, a fodder drop can be considered. The likely time period for which the animals are likely to be isolated should be considered. Maintenance levels of fodder should be provided only. Fodder may be provided via vehicle, boat or the air. With sheep, aerial lifting to a more suitable area might be more cost effective than continued aerial fodder drops, depending on animal numbers and distances involved.</p> <p>Refer to guide <a href="#">Field operations in natural disasters</a>.</p>
<b>Aerial lifting</b>	<p>Aerial lifting of sheep from solid, dry ground in cages beneath helicopters can be considered if the sheep are assessed as healthy and likely to survive. <a href="#">Aerial lifting will not be conducted for sheep standing in water or from muddy ground</a>.</p> <p>Where an aerial lift is recommended, the GPS co-ordinates of the destination area <b>must</b> also be identified and recorded as a Waypoint. The destination should:</p> <ul style="list-style-type: none"> <li>• Be in a location unaffected by further floodwater rises.</li> <li>• Have access to feed and water (without the need for fodder drops).</li> <li>• Be accessible for ground monitoring of stock health.</li> </ul> <p>Aerial lifting tasks require approval by AASFA Operations Officer.</p>
<b>No action with monitoring</b>	<p>In some cases a solution may not be apparent. The course of action might depend on uncertain floodwater levels, livestock are identified that will only be at risk if floodwater rises further or safety concerns might prevent action in the immediate time period.</p> <p>In these cases the owner must be notified and the situation scheduled for monitoring. The time period between monitoring might be anything from 12 hours to a period of about 3 days. Notes should include the recommended time period between monitoring events.</p>

Recommendation	Details
<b>Euthanasia</b>	<p>The decision to destroy distressed and injured animals is made as a last resort. It is only considered on animal welfare grounds and where other options are not available. Euthanasia may be considered if the animals display the following poor prognostic indicators:</p> <ul style="list-style-type: none"> <li>• Standing (or anticipated to stand) in floodwater for 5 days or more</li> <li>• Severe injuries</li> <li>• Exhaustion/debilitation</li> <li>• Severe bogging</li> <li>• Systemic illness such as neurological disease, septicaemia</li> <li>• Prolonged recumbency</li> <li>• Full wool, especially with evidence of fleece waterlogging or a green discolouration</li> <li>• Flystrike</li> <li>• Poor avoidance behaviour in response to low flying aircraft</li> <li>• Scattering rather than mob behaviour</li> </ul> <p>Where practical and safe, euthanasia should be conducted from the ground. Aerial destruction is only considered if this is not possible or safe.</p>