

AEC

Drone Application Guide

Research Ethics and Integrity Animal Ethics

Overview

This guide supports researchers preparing animal ethics applications involving the use of remotely piloted aircraft (RPA), also known as unmanned aerial vehicles (UAVs) or drones. For simplicity, the term *drone* is used throughout this document.

Drones are increasingly used in animal research, wildlife monitoring, conservation, and livestock management. While drones can provide significant scientific and animal welfare benefits by reducing the need for animal capture, handling, and direct observation, they may also cause disturbance or stress to both target and non-target animals.

Published evidence demonstrates that drone operations can elicit behavioural and physiological responses in a range of species. Researchers must therefore ensure that drone operations are planned and conducted in a manner that minimises impacts on animal welfare and the environment.

This guide outlines the information that must be included in animal ethics applications involving drones and provides practical advice for researchers who may be unfamiliar with their use in animal research.

Justification Requirements

An important component of any animal ethics application is the justification for the number of animals you need to use to obtain meaningful outcomes. The Animal Ethics Committee (AEC) must understand how the number of animals requested was determined. Help text within the application form provides guidance on the ways you can justify your animal numbers to the Committee.

The Committees understand that there are several methods to justify animal numbers, beyond statistical justification, however, justifications based solely in terms of 'usual practice' or budget will not be considered adequate. In addition, animal numbers cannot be justified based on how many experiments the available personnel can perform.

Clause 2.7.4 of the Code states:

The application form to commence a project must allow the applicant to provide the following information, as appropriate for the circumstances:

- ix. the number of animals required and the justification for this number. Where appropriate, information must be provided on:*
 - a. experimental design and statistical considerations*

You are asked to consider the UQ REI Animal Ethics Guide *AE Statistical Justification Guide*, to assist you in choosing the correct justification method.

Application Requirements

An important component of any animal ethics application is the justification of the impact upon animal welfare and how this will be managed/mitigated. You will be required to ensure your application includes enough information so that the AEC can consider the use of the drones relative to the impact on animals and the anticipated benefit of conducting the project.

It is suggested you carefully consider and provide detailed relevant information in potential impacts of drone use for proposed procedures, including impacts on non-target species (e.g. mammals, reptiles & birds).

A detailed overview of your proposed flight plan must be included in your animal ethics application (if a written flight plan exists this may be included as an attachment to support your application). This information is pertinent to the AEC's consideration of potential impacts on animal welfare and should include:

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Drone Specifications

Describe:

- Drone type (e.g. fixed-wing, multirotor, hybrid).
- Size and weight (where relevant).
- Propulsion method.
- Imaging systems and sensors.
- Any characteristics relevant to noise production or visibility.

Flight Operations

Provide a detailed overview of planned drone operations, including:

- Flight altitude.
- Planned flight speed (a range can be provided but it must be strongly justified).
- Approach angle to animals e.g. direct approaches from above have been shown to induce greater behavioural responses to drones).
- Flight path and search pattern.
- Anticipated hovering duration (time spent hovering above animals for photography or other sensor data collection).
- Launch and recovery locations.
- Frequency of flights over the same area (repeat coverage).
- Time of year when flights will be conducted (e.g. flights conducted during nesting periods may have a higher welfare impact).
- Time of day or night when flights are conducted.
- Potential weather impacts (e.g. heat, humidity, rain, cloud cover) on drone operation.

Where a written flight plan exists, it may be attached to the application.

Animal Welfare Assessment

Researchers must consider and describe:

Target Species

- Expected behavioural responses.
- Potential physiological responses.
- Any impacts on feeding, breeding, nesting, parental care, social interactions, movement, or resting behaviour.
- Measures that will be used to minimise disturbance.

Non-Target Species

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Applications must identify species that may reasonably be encountered during drone operations and assess potential impacts upon them.

Particular consideration should be given to:

- Ground-dwelling mammals.
- Arboreal mammals.
- Birds.
- Roosting bats.
- Marine fauna.
- Threatened species.

Breeding and Reproductive Considerations

Researchers should consider whether operations coincide with:

- Nesting periods.
- Breeding periods.
- Roosting periods.
- Maternal care periods.
- Seasonal aggregations.

Drone operations during these periods may result in higher welfare impacts and should be specifically justified.

Risk Mitigation and Flight Termination Criteria

Applications must describe measures that will be used to minimise impacts on animals.

Examples include:

- Maintaining appropriate separation distances.
- Restricting flight altitude.
- Limiting hover duration.
- Avoiding repeated approaches.
- Limiting flight frequency.
- Conducting flights outside sensitive biological periods.

Researchers should also identify circumstances in which flights will cease immediately.

Examples include:

- Animals displaying signs of distress.
- Repeated escape or avoidance responses.
- Aggressive interactions with the drone.

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- Abandonment of nests or dependent young.
- Identification of birds of prey in the immediate flight area.
- Any observed injury to an animal.

Applications should identify who is responsible for monitoring animal responses (spotter) during flights.

If any animal is injured by a drone, the CI must contact the listed veterinarian immediately to obtain advice, and an Unexpected Adverse Event report must be submitted within 7 days of the event.

Species-Specific Considerations

Drone operators should be familiar with the behaviour, ecology, and recognised stress responses of species likely to be encountered during operations.

Researchers are expected to review relevant scientific literature and consult appropriately experienced researchers where necessary. The review by Rebolo-Ifrán et al. (2019) provides a useful summary of documented animal responses to drone operations across species.

Pilot Studies

Where the likely effects of drone operations are unknown, a pilot study should be conducted before commencing a full-scale project.

Pilot studies should be designed to:

- Assess behavioural responses.
- Identify potential welfare impacts.
- Determine acceptable flight parameters.
- Establish minimum approach distances.
- Refine operating procedures.

Where a pilot study is not proposed, researchers should justify how acceptable operating parameters will be established.

Regulatory Requirements

In some instances, there may be legislative requirements which must be adhered to relative to the location of the work being undertaken and/or the species of animal being used, or that may be impacted. It is the CIs responsibility to ensure they are aware of and adhere to any legislated requirements. Some known requirements are:

- Drones must not fly within 100m of a marine mammal (e.g. whale or dolphin) - Nature Conservation (Animals) Regulation 2020.
- Regulatory notices may apply which restrict drone operation in Queensland Parks and Wildlife Service (QPWS) area – QPWS Drone Operational Policy

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Animal Considerations

ADVICE FOR RESEARCHERS WHO ARE NOT EXPERIENCED IN THE USE OF DRONES IN RESEARCH.

The following points provide some common examples and were developed in consultation with UQ researchers who have used drones in their research.

- **Livestock species** require a period of habituation to drones, especially if the purpose is to use the drone to interact with the animals, or to muster them. After this habituation period their responses become predictable and routine.
- **If you intend to survey birds** when using very small drones, the initial launch should commence >100m from the target birds. Larger drones require greater initial launch distances (because they are very loud and disruptive). Following this the approach distance may be adjusted according to the birds' response.
- **Marine terns**, when scavenging around fishing trawlers should not be approached with drones. They may attack the drones out of what is presumably territorial behaviour.
- **Birds of prey** need to be monitored closely. If the bird is in the immediate flight vicinity or if it appears to show any interest in the drone (e.g. turning towards the drone), the drone must land immediately. Birds of prey have been reported to attack drones (injuring themselves and the drone).
- **Large groups of birds** must be avoided (such as flocks of galahs or budgerigars). If these appear in the immediate flight vicinity, the drone must be landed immediately to avoid collisions.
- It is difficult to identify if **marine animals such as cetaceans and turtles** have much of a behavioural or physiological response to proximate drones. Government permits generally provide direction related to operation around these species.
- **When studying macropods** (e.g. kangaroos & wallabies) in the wild it is possible that animals will respond to the drone by hopping away. Macropods can perform a slow hop and a fast hop. It is imperative that the drone use does not induce a fast hop since it presents a significant risk that females will eject their pouch young. It is important that researchers perform a pilot study using escalating approach distances and speed to establish safe parameters of operation.

Reporting Requirements

If you receive approval to use drones in your animal ethics approval, then you must ensure that the following reporting requirements are upheld.

- Any Unexpected Adverse Events (any welfare impacts which were not identified in your application) must be reported to the responsible AEC within 7 days of the event. This is a requirement for target and non-target animals impacted.
- At the time of mandatory annual reporting (MAR) each year, you will be required to identify the number of animals 'used' in the reporting period. This includes target and non-target animals impacted by the use of the drone. Please review the help text in the form to assist you with your reporting.

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Permits and Compliance

Researchers are responsible for ensuring compliance with all relevant regulatory requirements.

The permits or approvals required will depend upon the location, species, and nature of the proposed work.

Potential requirements may include:

- **Civil Aviation Safety Authority (CASA)**
 - national regulator of drone use. Check the [CASA webpage](#).
- **Local governance**
 - Ensure you have obtained any relevant permission from local government and or traditional landowners and private landowners.
- **Wildlife / environmental authorities**
 - State permits may be required; common Queensland government examples include:
 - Scientific Purposes Permit (SPP), issued by the Department of the Environment, Tourism, Science and Innovation (DETSI) of Queensland (see www.detsi.qld.gov.au)
 - Marine Parks Permits under the *Marine Parks Act 2004*, issued by the Department of the Environment, Tourism, Science and Innovation (DETSI) of Queensland
 - National permits may be required; common examples include:
 - Marine Parks Permits, issued by the Great Barrier Reef Marine Park Authority (GBRMPA)
 - Cetacean Permits, issued by the Department of Climate Change, Energy, the Environment and Water (DCCEEW)

UQ Drones Collaborative Research Platform

The UQ Drones Collaborative Research Platform (CRP) is a multidisciplinary team providing:

- Drone equipment.
- Licensed drone pilots.
- Data collection services.
- Data analysis.
- Project management support.

While researchers are under no obligation to engage the UQ Drones CRP, it may be a valuable resource for those with limited experience in drone-based research.

Website: <https://research.uq.edu.au/facilities/crp/drones>

Email: drones@uq.edu.au

Phone: +61 432 210 232

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References

This document is to be read and utilised in line with:

[Animal Ethics in Teaching and Research Procedure](#)

[Australian Code for the Care and Use of Animals for Scientific Purposes](#) (current edition)

[Nature Conservation Act](#)

[Civil Aviation Safety Authority \(CASA\)](#)

[Environment Protection and Biodiversity Conservation Act 1999 \(EPBC Act\)](#)

[Environment Protection and Biodiversity Conservation Regulations 2025](#)

[UQ Drones Collaborative Research Platform \(CRP\)](#)